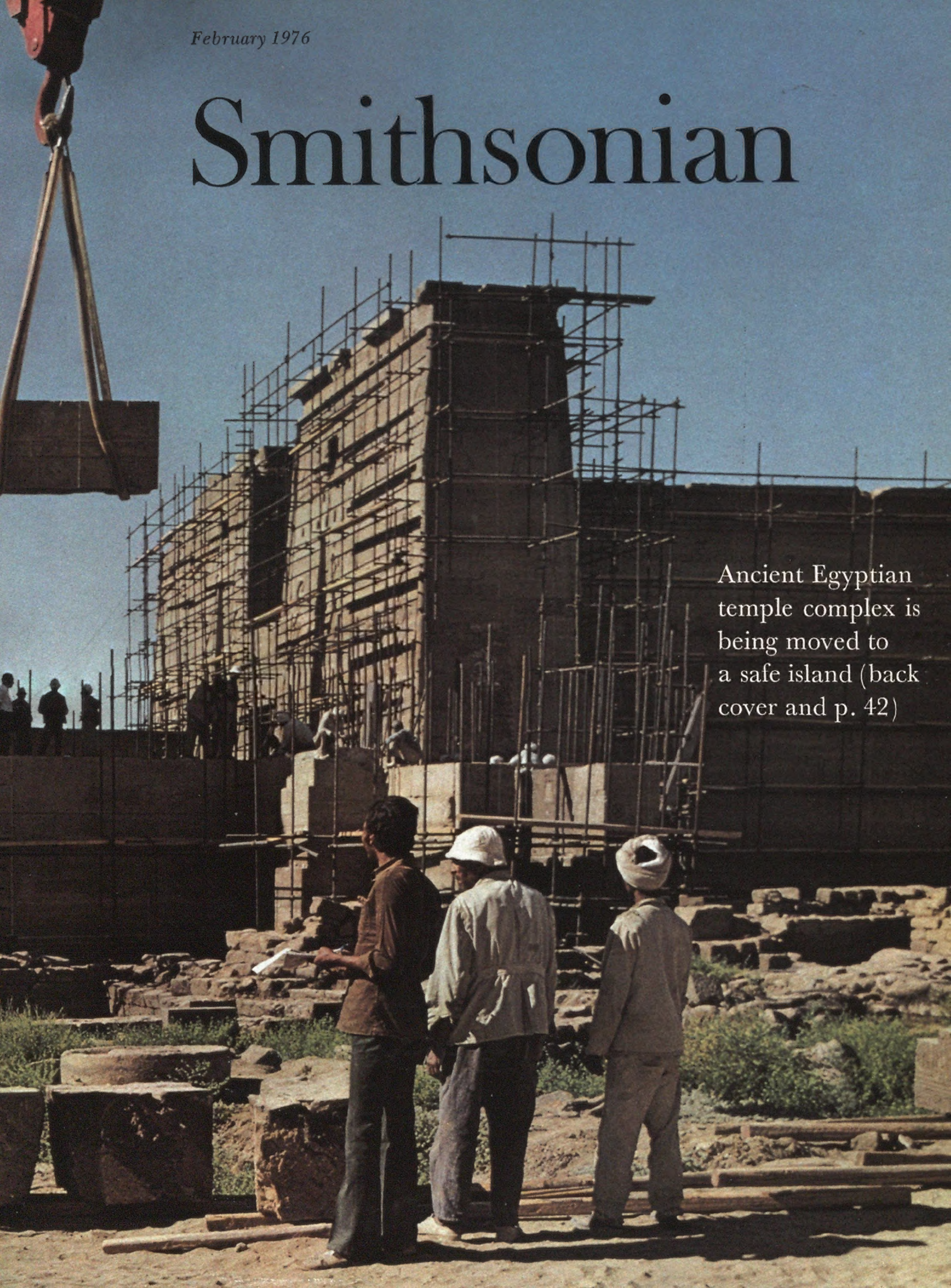
February 1976

Smithsonian



Ancient Egyptian temple complex is being moved to a safe island (back cover and p. 42)

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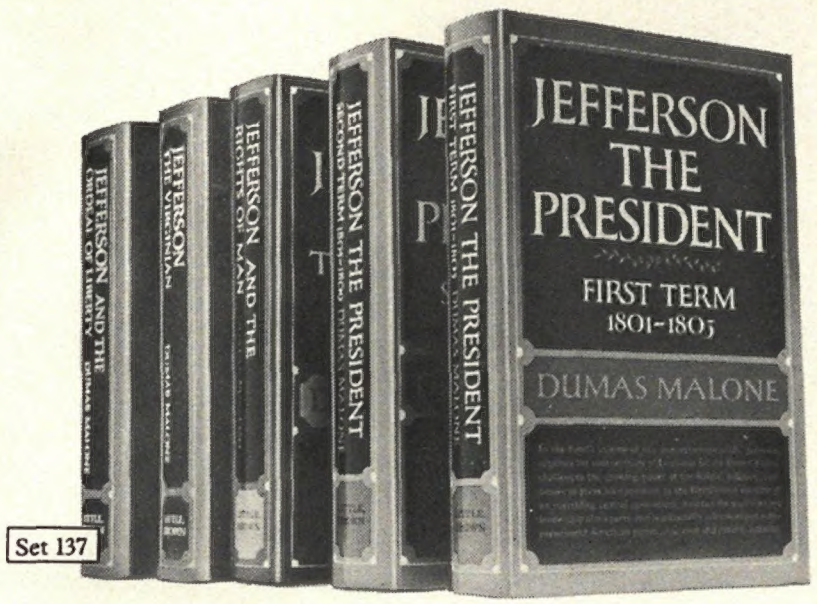

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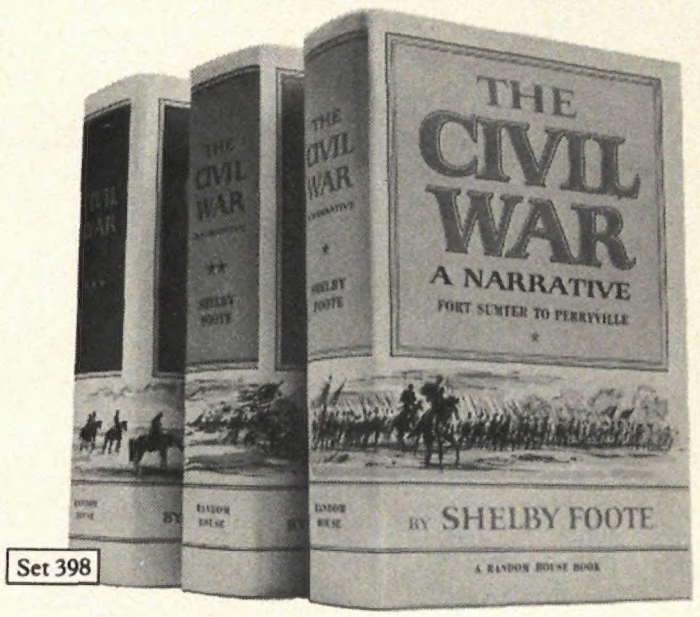

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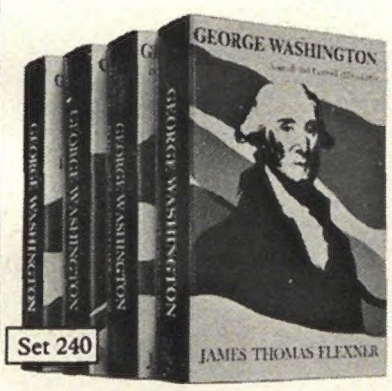

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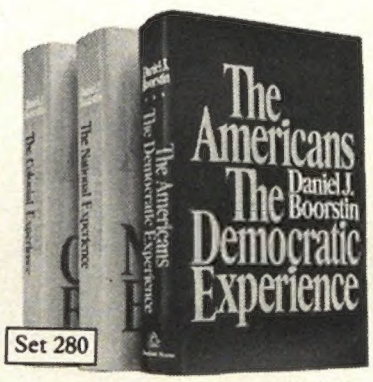

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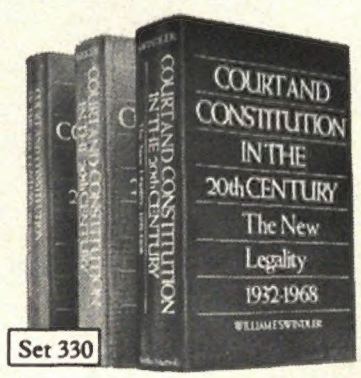

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February 1976

Smithsonian

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Plus other compelling arguments for buying a Steinway vertical.

A Steinway vertical piano costs more than other verticals. A little more than some. A lot more than others.

Yet the demand for a fine smaller piano is great enough that half the Steinways® built this year will be vertical models.

Here are some of the compelling arguments that stand behind their popularity.

The 'nuts and bolts' argument.

A Steinway vertical is essentially a Steinway with strings that run up and down instead of back and forth.

It is built with the same care and attention lavished on every Steinway grand.

It is fitted with hammers identical in quality to those in a Steinway grand—made in the same factory with specially prepared felt.

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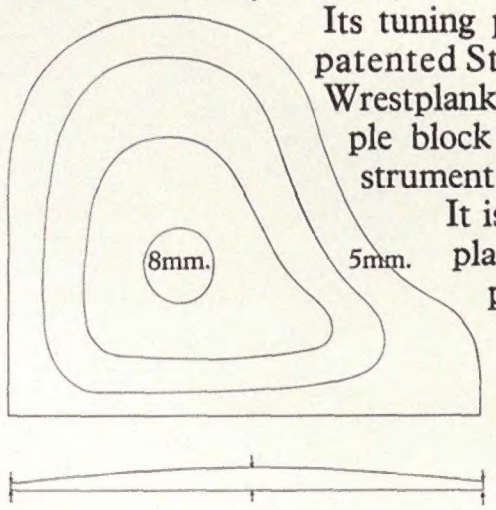
It has Steinway's exclusive Diaphragmatic® Soundboard, 3 millimeters thinner at the edges than in the center, that helps produce a strong, clean, characteristically Steinway sound.



This topographical map of a Steinway grand soundboard shows how all Steinway soundboards—grand and vertical alike—are tapered from center to edge. It's one of the reasons only a Steinway sounds like a Steinway.

Its tuning pins are set in the patented Steinway Hexagrip Wrestplank...a 6 layer rock maple block that holds the instrument in tune longer.

It is built in the same place, by the same people, of the same materials, to the same standards, as every other Steinway.

It is a smaller Steinway, and emphatically not a compromise.

The 'it's a great investment' argument.

Some pianos are like automobiles.

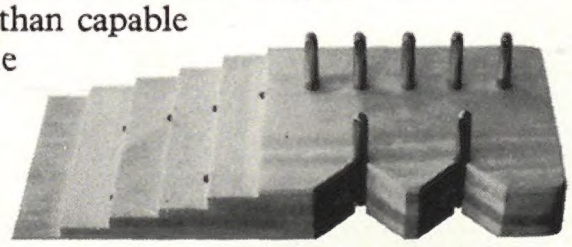
The moment you get them out of the showroom they begin depreciating like mad. But a Steinway piano holds its value because of its qualities as an instrument and because of its sheer physical endurance.

Look at the back of a Steinway vertical.

Check the dimensions of the back posts.

Note that they are joined invisibly and without resort to metal connectors. The posts are actually mortised into the foot piece, inserted and wedged at the top.

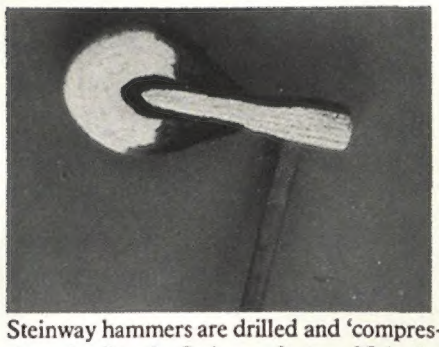
This neat fortress of select maple, birch and spruce is more than capable of bearing the 35,000 odd pounds of pull generated by more than 220 strings under tension.



The pin-block of every Steinway piano is built of six maple layers, set at 45° to one another, to grip the tuning pins throughout their circumference.

It is typical of construction found throughout every Steinway, and one of your assurances that, given proper care, your Steinway will last for as long as you care to own it.

When you compare vertical pianos, look for the hidden features, like back construction. The things you seldom see make a tremendous difference.



Steinway hammers are drilled and 'compression wired' in the Steinway factory. Nobody else makes hammers this way. They'd make any piano sound better.

It is also one of the reasons that if you should want to trade up to a larger piano in the future or simply sell the one you've bought, a Steinway will be worth a greater percentage of what you paid initially, than instruments of lesser quality.

The 'money isn't everything' argument.

This is a musical instrument and as a musical instrument the Steinway vertical has no equal for its size and price.

Its touch and sensitivity and sound are beyond what other verticals are capable of.

It can, in fact, be favorably compared with some small grand pianos which are not Steinways.

Is price really what you're looking for in this kind of purchase?

The 'beautiful furniture' argument.

The style and proportions of a Steinway are authentic, and classically correct.

As a result, the one you buy today will not become 'dated' as you own it. You've probably seen for yourself 100-year-old Steinways that are quite at home in contemporary surroundings.

And as for the tiny details that make the difference between mere cabinetwork and artistry, we simply suggest that you look at a Steinway and compare it with anything else.

A keen eye will tell you more than we can here.

The 'don't short-change the kids' argument.

A vertical is sometimes a first piano for the children.

A poor one is merely a machine for reproducing sound. A fine one can be an inspiration.

And, on a purely technical level, a Steinway opens students' eyes to nuances of touch and tone as no other vertical piano can.

If you're buying the kids a piano just for fooling around, you can get by with less than a Steinway.

But there's always the chance that with the Steinway, they may end up doing a lot more than just fooling around.

For more information write to John H. Steinway, 109 West 57th Street, New York 10019.

STEINWAY & SONS

The view from the castle

Smithsonian Associates take part in learning processes offered by the Institution; they also face the desirability of private support

In his will, setting aside his fortune for the benefit of the United States, James Smithson urged the creation of an institution for "the increase & diffusion of knowledge among men." It was to diffuse knowledge that the Associates of the Smithsonian were created. As I said last month, "The acquiring of learning is a continuous process, for the educated man is the first to acknowledge his own ignorance."

A membership in the Smithsonian as an Associate is not only an opportunity to participate through our national magazine, SMITHSONIAN, in a bit of mind-stretching, but also a chance to join in the continuous learning process as we spread activities and exhibits around the country. Our traveling exhibits are seen each year by some five million people. Our traveling performances are seen by additional thousands. We are increasing such programs, partly with our folk-life activities, partly by joining up with the programs of museums and cultural centers across the nation.

We hope that you, as Associates, agree that, as I said last month, "to be educated is to develop a sense of public responsibility." It is this growing sense that may lead you to safeguard the tradition of enlightened humanism represented by your own curiosity, your own lively interest, your own sense of fraternity. For this we need your help, for innovation goes hand in hand with the dissemination of knowledge. We can only build on such a structure with private support.

The Smithsonian Institution has grown from its original castle, completed in 1855, to a variety of museums and research centers: eight museums along the Mall; four more—as well as a zoo and a cultural center—in Washington; one museum in New York City; research laboratories and centers in the District of Columbia, Maryland, Massachusetts, Nebraska, Florida and Panama, with substations around the world. In the 1850s, our budget was largely private. But Congress has always mandated the housekeeping responsibilities of our publicly visited buildings and the maintenance of our national collections, and now our annual federal appropriation is 75 percent of the total. Only a fraction of the remainder—which supports the Associates—comes from endowments.

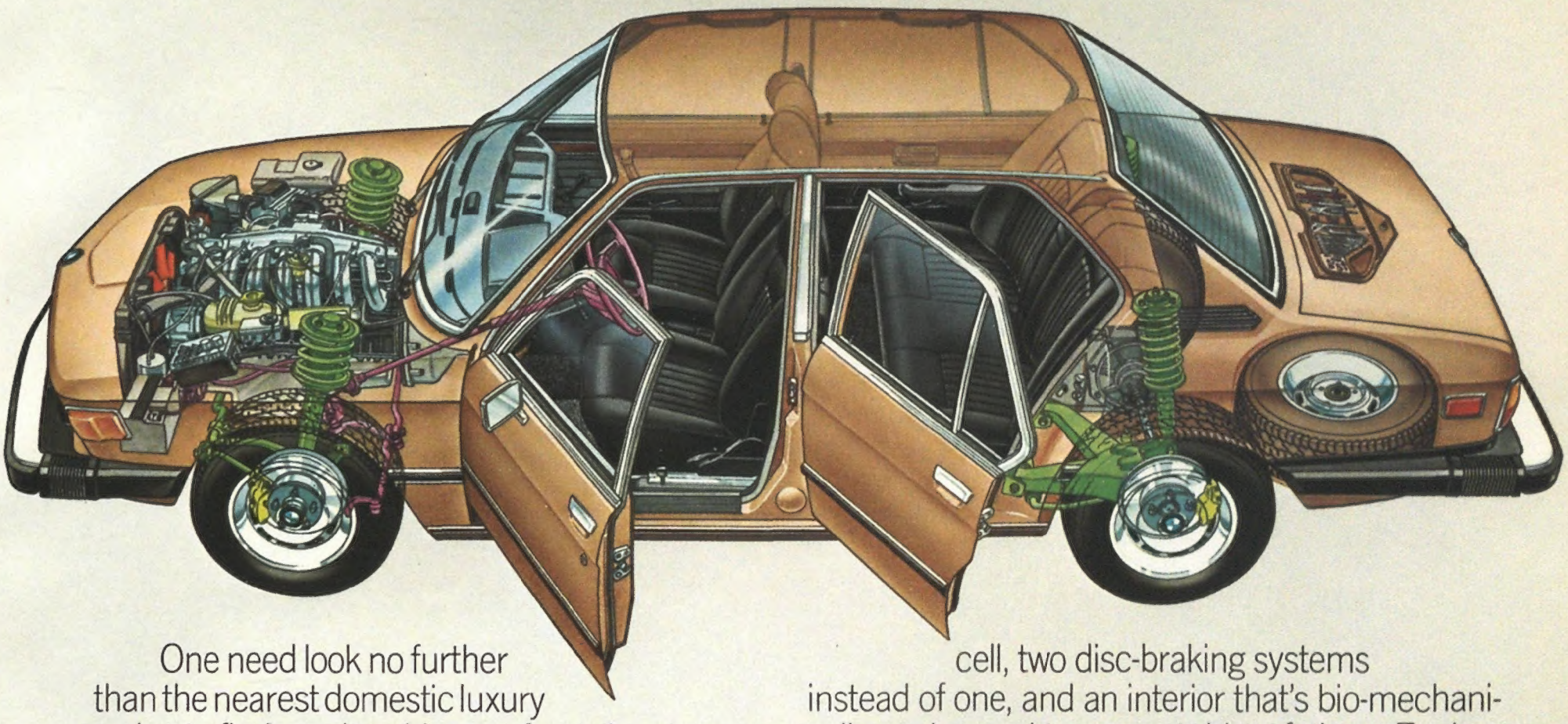
When I was a university professor, it was a maxim among my colleagues that financial support came largely for *ideas*. It was hard to evoke a generous outpouring of funds for mere bricks and mortar. Government support of the Smithsonian tends to corroborate this. We can build and maintain the national collections with government funds, but we must turn to our own public for the support of ideas. Our interest in continuous learning is an idea; the whole concept of the Smithsonian as an open university is mostly an idea. If by seeking to attain this we can rediscover our American ideals, then here indeed is a cause for which we feel justified in asking your support.

As citizens today, we live in danger of losing track of the scale of our lives and of the roles we should play. Sadly, many people as they grow older cease to be interested in anything at all—a condition which I think includes their relentless self-preoccupation.

Of course, the cure is to enjoy life by continuing to grow, and so find a security that acts as a buffer against the stresses our technology has brought upon us. This is what we think being an Associate is about, and why we think it is worth your participation.

S. Dillon Ripley

The BMW 530i. An engineer's conception of a luxury car, not an interior decorator's.



One need look no further than the nearest domestic luxury sedan to find ample evidence of a styling department run rampant.

Brocade upholstery, opera windows, cabriolet tops, distinctive hood ornaments, etc., etc., etc.

Yet, underneath all this opulence, one generally finds that the average luxury car is indeed a very average car.

At the Bavarian Motor Works, it is our contention that, although the pursuit of luxury is no vice, when all is said and done, it is extraordinary performance that makes an expensive car worth the money.

So, while the BMW 530i features a rather lengthy list of refined luxuries, it also features a singularly responsive 3-liter, fuel-injected engine that never fails to astound even the experts with its smooth, turbine-like performance.

It features an uncanny four-wheel independent suspension system—McPherson struts in front and semi-trailing arms in the rear—that allows each wheel to adapt itself instantly to every driving situation, smoothly and precisely. Giving you a total control that will spoil you for any other car.

It features a solid steel passenger safety cell, two disc-braking systems instead of one, and an interior that's bio-mechanically engineered to prevent driver fatigue. Each seat in the 530i has an orthopedically molded shape. All controls are within easy reach. And all instruments are clear and visible.

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Phenomena, comment and notes

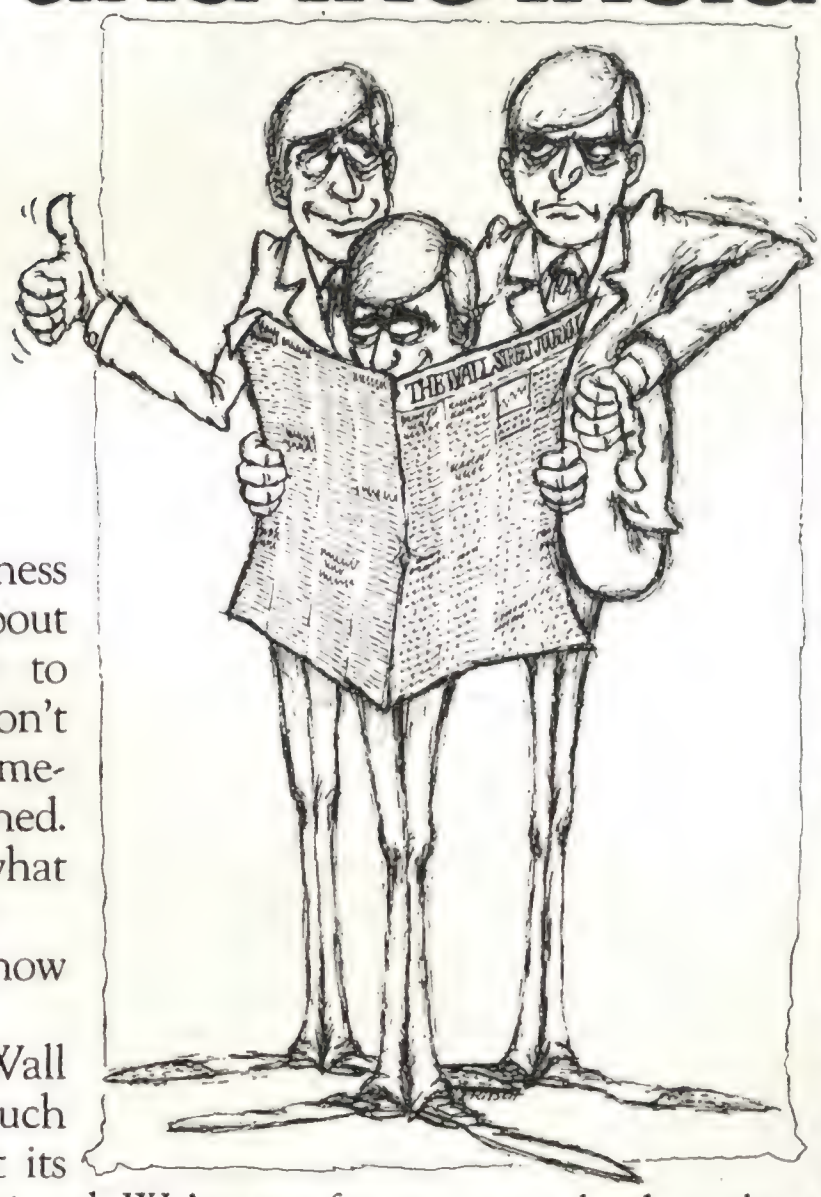
Malpractice in medicine and English, plastic on the beaches, comets in our genes—and the upset of dinosaurs

There are lots of theories to explain the extinction of the dinosaurs some 60 million years ago, some less promising than others. For example, it has been suggested that they died of constipation when their diet changed from oily conifers to flowering plants. But more likely is the notion that they could not survive the change in climate when the continents broke apart and began to drift toward their present locations. Recently found evidence from the cores of the Glomar Challenger's deep-sea drilling efforts supports the climate theory, but in a circuitous way.

Cores taken from what was once the seam between South America and South Africa contained layers of black shale with a carbon content in excess of all of North America's coal deposits. The shale, according to *New Scientist* (Volume 68, Number 977), formed in poorly aerated

Did dietary change do in the dinosaurs?

There are three sides to every question: the pro side, the con side and the inside.



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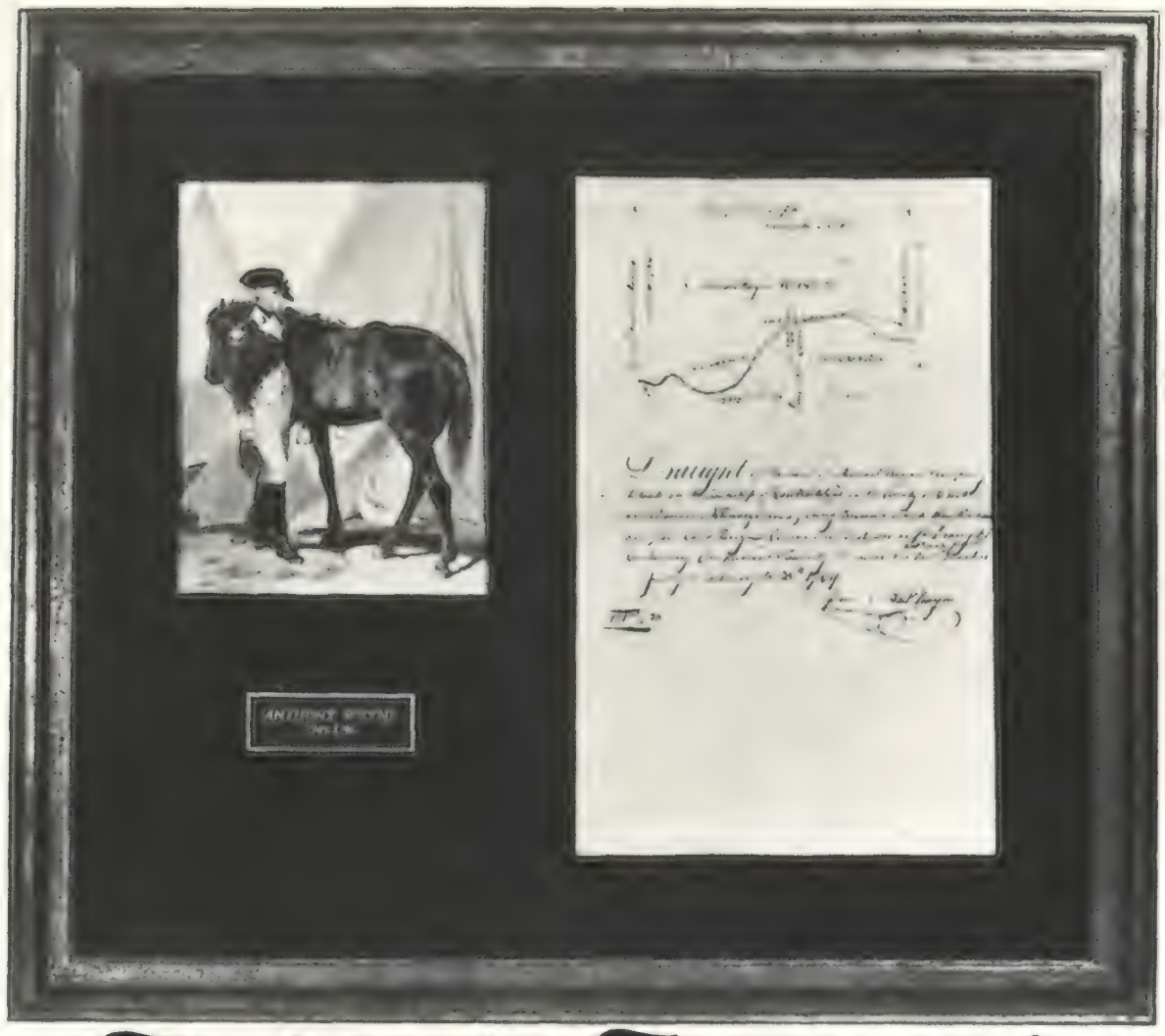

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basins when vegetable and animal matter decayed through the attentions of anaerobic bacteria. Its formation most likely caused a dramatic decline in the carbon dioxide in the Earth's atmosphere. That would have permitted a great deal of the Earth's heat to dissipate into space, leading to a much colder climate. So it may have been bacteria that ultimately did in the dinosaurs.

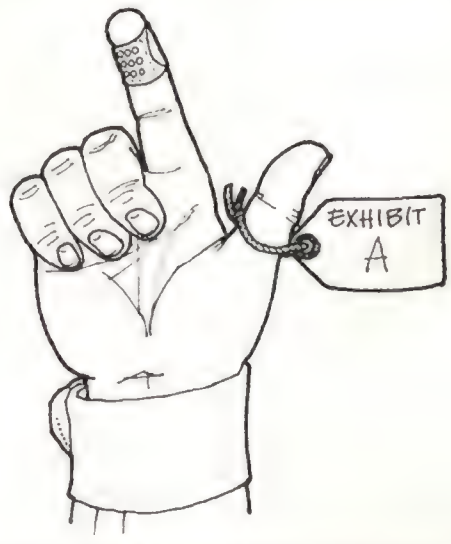
Malpractice facts

A pesky problem in modern medical practice is the malpractice suit. As the cases proliferate, insurance rates go up and doctors cautiously insist on additional (and expensive) diagnostic techniques. It is conventional wisdom that the kinds of doctors most often sued are cardiologists, obstetrician-gynecologists, anesthesiologists and orthopedic surgeons, but until recently there have been very few hard facts about the matter.

Now the National Association of Insurance Commissioners has made a nationwide study of 1,211 malpractice suits and has come up with a few surprises for the insurance companies.

For example, there were more suits against doctors who do no surgery than against those who do surgery. Among surgeons, those who do minor surgery are more likely to get sued. There were nearly twice as many suits against doctors with board certification as there were against those not certified, which *Medical World News* interprets as an indication that highly trained physicians may be more willing to handle difficult cases.

Only a tiny fraction of malpractice suits ever got to trial, and when they did, the great proportion of them (51 out of



Just how much malpractice is practiced?

62) were won by physicians. And from the doctor's standpoint, it is better to have the case decided by a jury, rather than a judge: The average award to a plaintiff from a judge-decided case was $7,500; from a jury trial, $666.

The origins of language

The question of when and how language originated has tickled the speculative mind of mankind for thousands of years. Most current theories suggest that speech began about a million years ago in Africa, with toolmaking and organized hunting.

On the other hand, a Princeton University psychologist named Julian Jaynes says that language began only 70,000 years ago in the north temperate zone from Europe and North Africa to Asia, when the glacial ice moved south for the fourth time. The climate was such that language would have considerable survival value, whereas in gentler climates it would not have been needed. At the same time, Jaynes says, the hominid brain, including that of the Neanderthalers, was sufficiently developed to permit speech; there is evidence, for example, that the precursors of early Man, such as the australopithecines, were right-handed, an indication that the brain was becoming asymmetrical, which is a prerequisite for speech.

One would expect to see some early results of language in the archaeological record, and Jaynes points to a sudden proliferation of new and different tools around 40,000 B.C. He also suggests that modifiers, not nouns, were the first words. Word-endings with meanings such as "near" or "far" might have turned slowly into commands to come or go. By 25,000 B.C., nouns for animals were coming into use, coinciding with the drawing of animals on cave walls. Then, about 10,000 B.C., nouns for people—names—would have arisen, along with the habit of burying people ceremonially.

The distaff version

As plausible as the Jaynes theory may seem, it doesn't satisfy everyone. Writing in *Current Anthropology* (Volume 16, Number 4), Doris F. and A. David Jonas of London propose an entirely different theory. They begin by citing the experimental evidence that girls are superior at

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by JACK MUSIEL
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language acquisition and boys are superior at "visuo-spatial abilities."

They go on to attack the idea that language evolved as a useful concomitant of organized hunting by males: Human and animal hunting groups generally pursue their prey in silence, for obvious reasons. Instead, say the Jonases, language arose out of the mother/child relationship. "As evolutionary changes in

Did language begin as innocent babble?

the vocal apparatus permitted the making of an ever greater variety of sounds, this ability would be exercised by the very young infant." The baby babbles, the mother lovingly babbles back in imitation, eventually assigning meanings to the sounds (which of course the baby doesn't do).

Thus, say the Jonases, protolanguage began as a way of cementing the bond between the mother and the child. Or as the Psalmist said, "Out of the mouth of babes and sucklings. . . ."

The future of language

Whatever human language's origins really are, its future is in serious doubt. *Science News* (Volume 108, Number 24) reports that it has uncovered the acronym of all time in a Hughes Aircraft publication: PUMCODOXPURSACOMLOPAR. It stands for pulse-modulated coherent Doppler-effect X-band pulse-repetition synthetic-array pulse compression side lobe planar array.

Neuterizing speech

In response to a recent complaint in this column that such terms as "chairperson" are needed but sadly unmellifluous, a Smithsonian Associate, David Logan of New York City, has written to air some of *his* fears for the language:

"I don't deny there are problems, but chairperson isn't that awful once you say it a few times, with wine.

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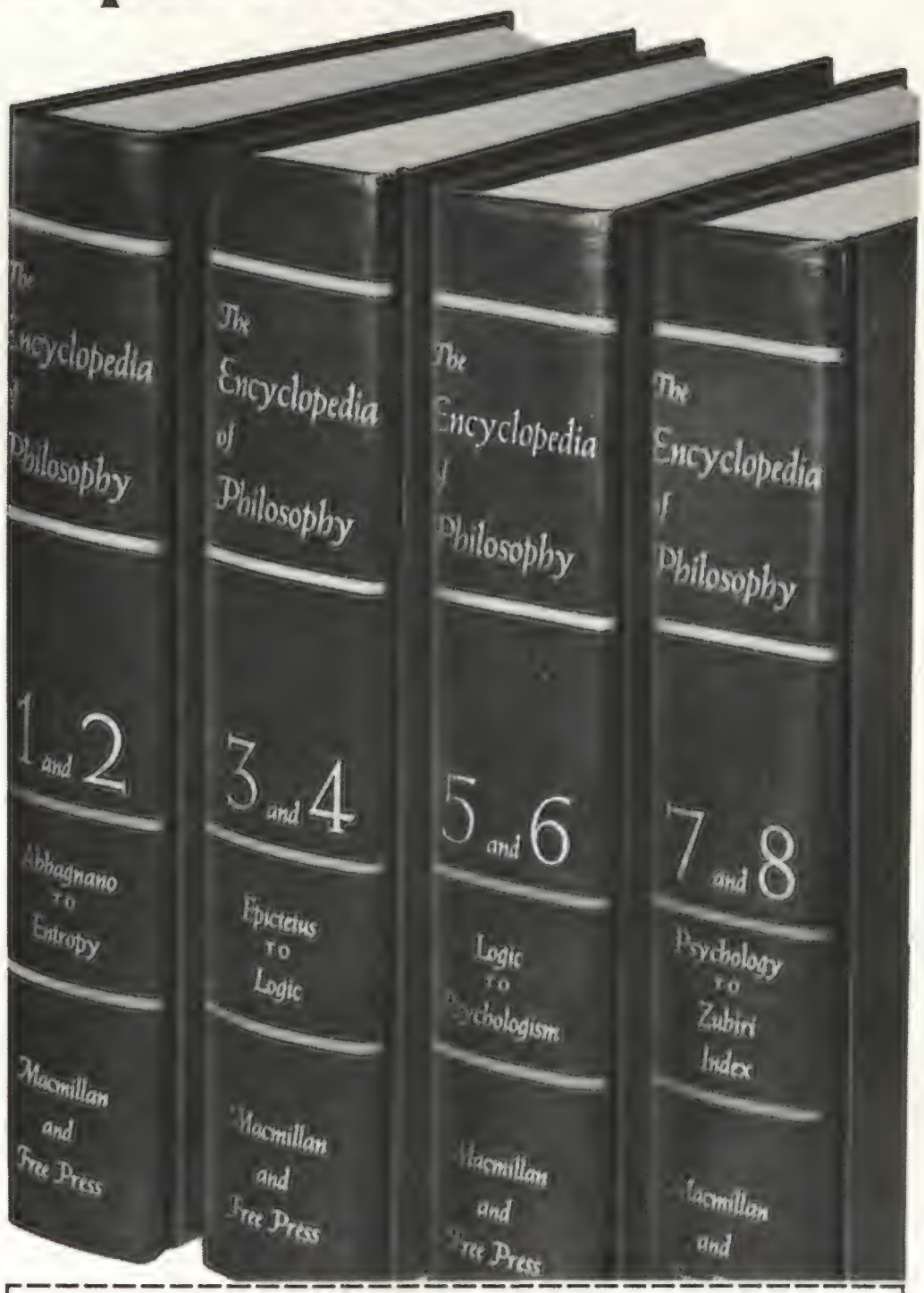

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Last resort

The only thing more depressing to the recreationist than a ski resort without snow is a beach drenched with oil from an offshore spill. And, in spite of a lot of talk and some action, oil spills continue to occur. So the Environmental Protection Agency and the American Petroleum Institute have joined forces to fund a search for solutions. One is to spray something on the beach *before* an oncoming slick reaches shore, something that will make the beach easier to clean up. But what something? According to *Chemical & Engineering News* (Volume 53, Number 49), several substances are soon to be tested on real beaches. Some are microbial solutions, others are in the nature of plastic.

For example, one company is pushing an aqueous suspension of polyvinal acetate, Polyco 694. You spray one or two coats on a beach and oil won't stain or penetrate the sand. Polyco 694 is chemically similar to Elmer's Glue, and in spite of the manufacturer's assurances that it washes away in saltwater, it all seems like a Hobson's choice. In a fine example of understatement, an EPA official says: "Esthetically, a plastic coat on the beach is not exactly the most pleasing prospect."

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Well, it wasn't a fizzle at all for those people most concerned with such matters. One of them, astronomer Fred L. Whipple, former director of the Smithsonian's Center for Astrophysics at Harvard, recently summarized Kohoutek's value to science in an address to the American Philosophical Society.

The comet, he says, was a fine naked-eye object, but of course not in cities. "I do not feel apologetic about the fact that it brightened by only a million times," said Dr. Whipple somewhat proprietarily. In fact, thanks to the advance publicity barrage, Kohoutek was surely the best-

Who was happy with Comet Kohoutek?

observed comet in history, and the findings from radio, optical, ultraviolet and infrared observation showed that comets "present an array of organic molecules somewhat reminiscent of an elementary course in organic chemistry."

Dr. Whipple went on to say that some astronomers believe that planets were formed as extremely hot bodies "from which practically all of the original atmospheres were removed by an early solar gale." He suggests that the volatile materials, like water, oxygen, nitrogen and other elements needed for life, may have been sprinkled on the Earth later by comets (though they could also have come from the asteroid belt). "In any case," he says, "I can say confidently that a significant fraction of the atoms in your bodies came from comets."

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Letters to the Editor

Cartoons

Dear Sir: The cartoons introduced by Daniel P. Moynihan in your December issue brought back a flood of memories. My wife and I were looking through the issue together when we came upon the powerful cartoon by C. D. Batchelor in which a seductive woman labeled "War" is inviting "Any European Youth" upstairs into a sleazy rooming house.

The visual impact is stunning, but one of the most powerful details of this early World War II cartoon was missing—the caption: "Come on in, I'll treat you right. I used to know your daddy."

Arthur J. Morgan
New York City

The golden mean

Dear Sir: William Hoffer, in his article "A magic ratio recurs throughout art and nature," mistakes a small but vital point. Contrary to his assertion, the extreme and mean ratio, or golden ratio, is not "precisely .618034" at all. In fact, a description of it in terms of our common arithmetic (based upon a unit of one) can only be done to a degree of approximation. A short look at one of the properties of De Divina Proportione quickly reveals it to be an irrational number, one which like π (pi) cannot be *exactly* written out.

If you take the positive value $X \frac{\sqrt{5}-1}{2}$ = 0.6180339887 (to ten places), this number goes on and on and on and on.

Humility demands that we recognize our innate inability to express precisely much of art, nature and mathematics.

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Michael Gian
Rockport, Texas

Dear Sir: Rather than 1, 2, 3, 5, 8, 13, 21 . . . , I believe that 0, 1, 1, 2, 3, 5, 8, 13, 21 . . . is the correct beginning for the Fibonacci series.
James N. Jansen
Pekin, Illinois
Mr. Jansen is correct about the first three numbers in the sequence. Our article picked up the series at the end of the first month: "Fibonacci listed the total pairs of rabbits at the end of each month. . . ." The full Fibonacci sequence does include the number of pairs of rabbits at the beginning of the first month (1) and the number of pairs before the beginning of the first month (0). Ed.

Dear Sir: You have changed Yale scholar Jay Hambidge's name to "Hambridge."
Berry Fleming
Augusta, Georgia

Dear Sir: After the definitive article in your November issue in which Russell Lynes qualified the neoclassic revival in architectural terms, what happened to "the magic ratio," by William Hoffer? Despite all that research, he missed "Goodman's method for setting out a volute." The name "volute" is the most common architectural designation for the spiral or scroll-shaped form.

Herman Goodman effectively showed architects the way to draw the classic Ionic column capitals by using a simple division of the square; his diagram is much the same as your drawing of a golden spiral. "Setting out a volute" was a standard architectural drawing test for more than 100 years.
Kelly Buchanan
San Francisco, California

Music manuscripts

Dear Sir: Author Carleton Smith is to be congratulated on his tireless search for those invaluable music manuscripts lost during World War II. It is to be hoped that his efforts will soon lead to the safe return of these treasures to their proper homes. One oversight in the article should be noted: The manuscript reproduced on the opening page of the article is not Beethoven's, but rather the autograph of

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the cadenza from the last movement of Brahms' First Piano Concerto.
J. Rigbie Turner
Assistant Curator of Music Manuscripts
The Pierpont Morgan Library
New York City

Dear Sir: As Carleton Smith says, "Winifred Wagner has done a superlative job safeguarding Wagner's manuscripts," but she has also managed to retain another interesting anachronism, namely a warm feeling for Adolf Hitler. She was recently quoted in *Time* as saying, "If Hitler walked through the door today, I would be just as glad and happy to see and have him here as ever."

I am appalled that she is treated so gently in the article. Art and politics, fortunately or unfortunately, are not so easily separated.
Daniel Feil
McLean, Virginia

Tramps

Dear Sir: In "Riding freights is no picnic for today's tramps," author Roger Warner writes "A few more miles, then the Mississippi River and then the Omaha yards." Either Mr. Warner needs a refresher lesson in geography from Jim the Tramp (who is described as having a "phenomenal knowledge of geography") or the Mighty Mississippi has recently veered westward across Iowa and now fills the channel where the Missouri River used to flow.
William Gall
Huron, South Dakota

Beetles

Dear Sir: Michael Emsley's article about beetles was excellent and the reference to beetles as a source of food should not be dismissed. Although I now find the thought nauseating, during the 1920s when I lived in Swatow, China, I occasionally bought bags of "pickled beetles" from street vendors. They tasted, as I remember them, exactly like very fine, salted almonds.
Henry R. Awad
Bronx, New York

Experimental housing

Dear Sir: Sam Love's article, "Houses designed with nature: Their future is at

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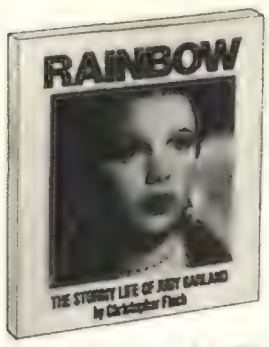

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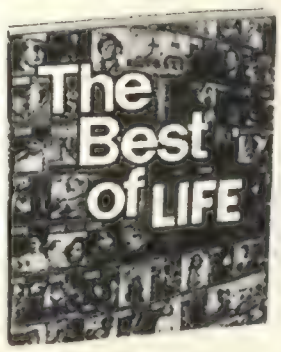

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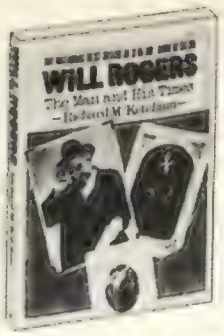

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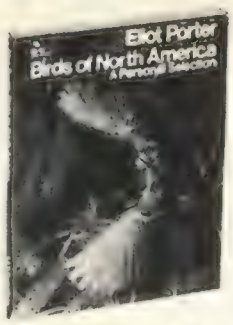

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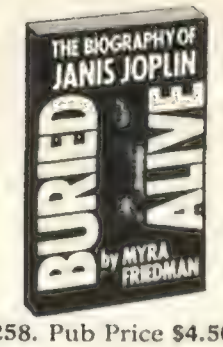

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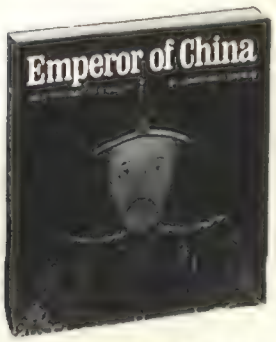

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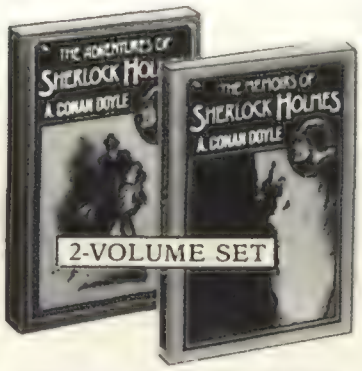

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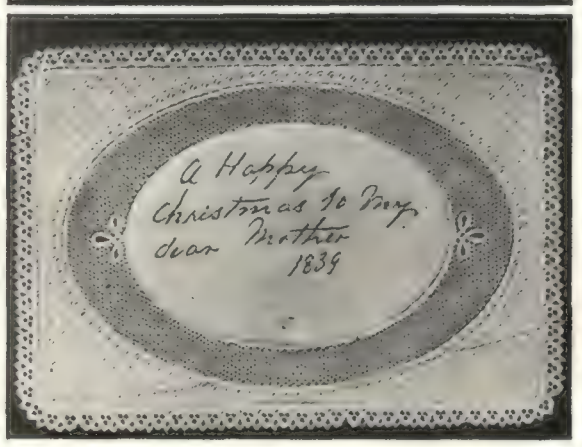
hand," was most enjoyable, but he failed to mention the side effects of using solar hot water.

Steve Baer, whose house was featured in the article, states: "Solar hot water gets you cleaner, makes you happier, rests your bones, cures impotence. If you don't believe it, ask someone who uses it."
Berry Hickman
Placitas, New Mexico

Christmas card

Dear Sir: Patrick Ryan's article stating that John Calcott Horsley, a British artist, designed the first greeting card in 1843 is in error. There is now evidence that Christmas greetings were exchanged as long ago as 1839, according to a greeting-card collection at Rust Craft, Dedham, Massachusetts.

Made of delicate paper lace and measuring four by two and three-quarters inches, the recently found card [see below] reads: "A Merry Christmas to You" on the front. On the back, in fading but still legible script, is written "A Happy Christmas to My Mother Dear, 1839."



This card was discovered by a New Haven, Connecticut, rare book dealer between the pages of an old Bible received in a shipment of books from England. It was made by the London firm of Windsor and Pearce, whose existence at that

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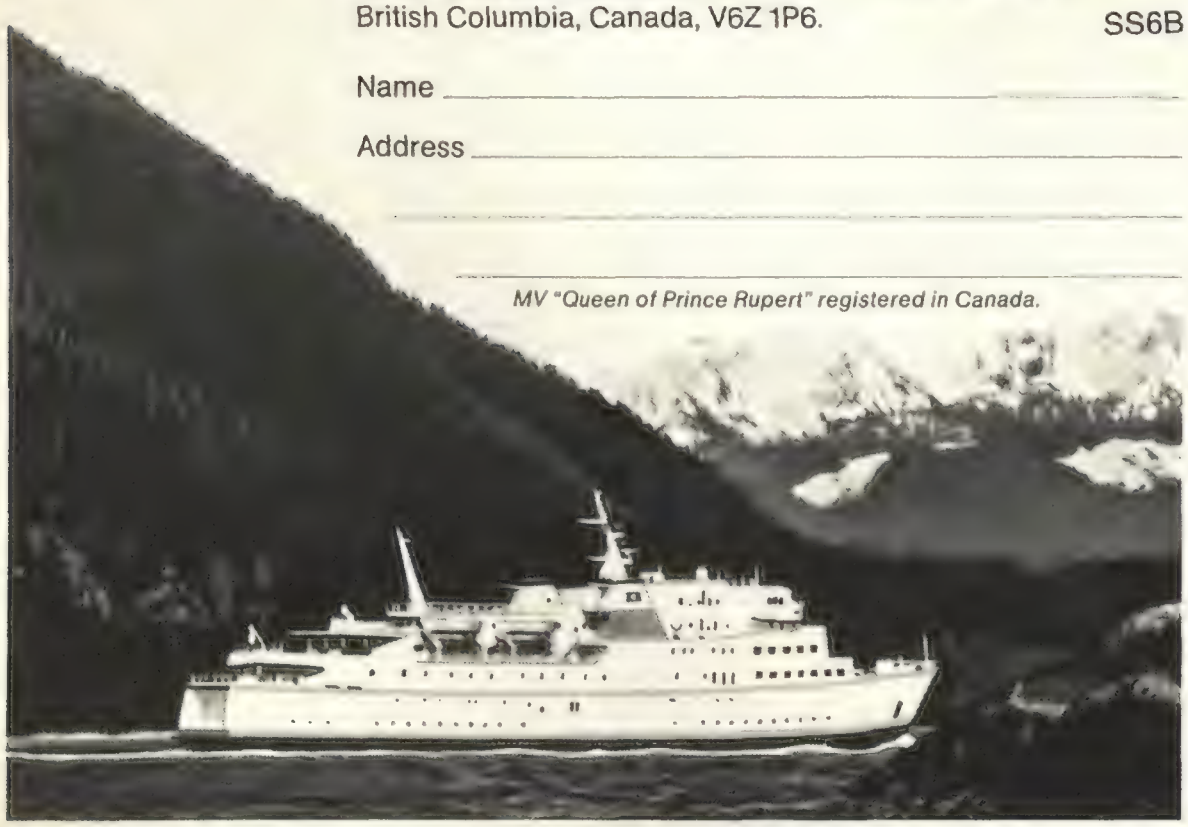

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time has been verified by the Guildhall Library in London.
Raymond A. LaJoie
Worcester, Massachusetts

Around the Mall and beyond

Dear Sir: I was delighted to read of the "Whatsits?" display at the Museum of History and Technology in Edwards Park's "Around the Mall and beyond." I hope it serves as a model for future displays in many museums, because visitor participation, in my estimation, is the most valuable innovation being evidenced in museums.

As a child, I found the conventional displays quite monotonous and consequently did not learn much from them. Today, more museum displays include things to touch, buttons to press, quizzes to take, and various other creative means of making museum visits enjoyable as well as informative.
Jennifer S. Youngman
Elsah, Illinois

Phenomena, comment and notes

Dear Sir: In "Phenomena, comment and notes," James K. Page jr. perfunctorily mentions "a kind of legal brief called *Do Trees Have Rights?*"

I believe he intends to refer to *Should Trees Have Standing? Toward Legal Rights for Natural Objects,* by Christoper D. Stone, which is a significant and exciting work for anyone interested in our development of a planetary ethic.
Hal Lenke
Union, West Virginia

Dear Sir: A major current question is how similar humans and chimpanzees are. Thanks to the three sociologists who published the results of a study in *New Scientist,* and Jane Goodall's studies of chimps, we now know. Chimps don't know enough to come in out of the rain and 30 percent of people don't know enough to move out of an area after ample advance warning of an earthquake.
Glen R. Puro
Geneva, New York

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Around the Mall and beyond

They got the big steam engine running the other day. It's one of those delightful old machines that awed the spectators at the Philadelphia Centennial Exhibition in 1876, and will do so again when the Smithsonian recaptures that marvelous display this year—beginning in May. These engines, with their polished steel drive shafts and great barrel-like cylinders and massive flywheels, fascinate us today because they are so much the product of human craft and devotion instead of the

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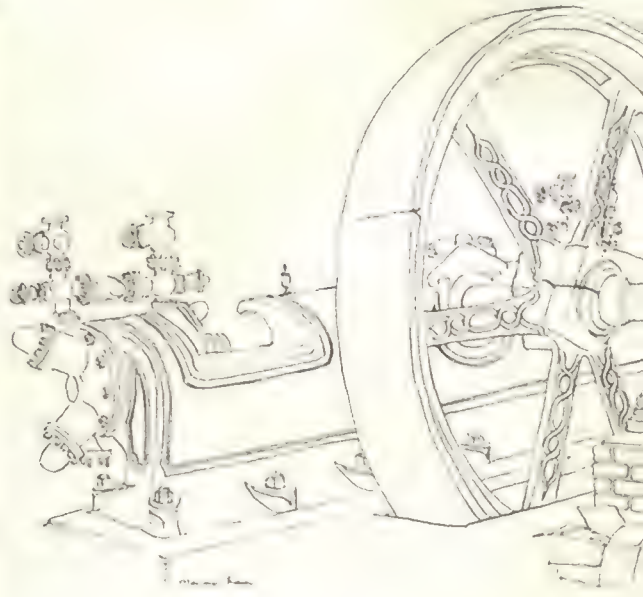


automated processes we are accustomed to. They even have decorative stripes and flowers painted on their cylinders and along their spokes. They undoubtedly had names, too.

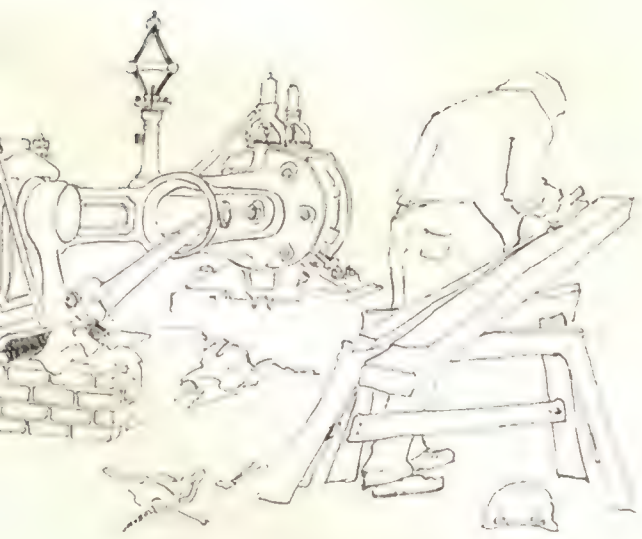
Anyway, the people who have been putting the engines together in the Arts and Industries Building hooked up a compressed air hose to the steam inlet and after several urgings, adjustments and imprecations, away she went, the piston rod flashing in and out, the crankshaft winking back reflected lights as it

muscled the flywheel around, the spokes blurring, the governor whirling and the whole hall filled with the sound of motion. It was a deep stage whisper with muffled ticks and knocks as consonants.

The young men who got the big engine going looked at each other with silent pleasure, then walked lovingly around the thing, touching a bearing here, laying hands on a connecting rod there, feeling for too much heat, listening critically to the ancient voice. This particular engine was used by the Wiessner (later American) Brewery of Baltimore to compress ammonia used in the refrigeration system. It had not been operated for 25 years.

The longer it ran and the more often it was started, the better it sounded. It was quite demonstrably running in—"finding itself" as the old expression went. And as it did so, the stage whisper dropped to a lover's words, breathed in the night.

Not without some help. One of the young men, on his meticulous inspection, paused beside the crankshaft and listened. Then, in the half-second while the crank was at the upper arc of its rotation, he smacked the steel bed under it with a hammer. Instantly, the sound he had



heard, whatever it was, vanished, for he moved on.

I recognize these steam mechanics as belonging to a type that gathers at the Smithsonian as naturally as eels in the Sargasso Sea. Some people are so attuned to the past that their forced involvement with 1976 seems almost a cruel hoax. Many keep struggling to preserve the motives and rewards of the past, no matter what nasty shots the present takes at them. This bunch often ends up in politics, as we all know. But others are ma-

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terialists, preoccupied with old engines, old ships, old apothecary jars and gilded eagles and pipes and kites and bicycles. These *thing* lovers all eventually seem to wind up somewhere in the Institution—and that's good.

A great many of these unnamed, unsung aficionados are presently engrossed with "1876: A Centennial Exhibition," the repository of these engines—and some 29,000 other old *things* as well. Visitors will see the treasures for themselves, three months from now, but they may not appreciate all the human effort and skill and special devotion that have been going into the exhibit.

There is, for example, the ship's model. Visitors to the re-created 1876 exhibit will have trouble overlooking it, since it's 51 feet overall, with masts reaching up to the steel girders of the hall. It is a monument to a lot of meticulous handwork by Smithsonian staff people who happen to be dedicated to the things of the past.

The model is also a monument to the steam sloop of war *Antietam,* a fast and handy ship of the post-Civil War navy. The assistant naval constructor who supervised the building of the original ship became an instructor at the U.S. Naval Academy at Annapolis and suggested the idea of the model as a training aid, to teach midshipmen their ropes. Lovingly built, with great attention to rigging, the model *Antietam* was a feature of the Philadelphia exposition, then spread her sails in the Naval Academy.

A group of Smithsonian people—six employees, two volunteers and a sailmaker—have been using a couple of rooms in the Museum of History and Technology which have been converted into a miniature ropewalk and a small-scale sail loft. Here masts and yardarms of spruce, fir and white pine, all with gleaming brass fittings, are dressed in suits of linen sails and all the tracery of standing rigging (shrouds and stays that hold the masts up) and running rigging (which sets the sails).

The ropewalk is a long, narrow frame where the strands of line are revolved so that they wind together to form rope—in this case miniature rope. This cordage is then fitted into tiny handmade deadeyes and blocks and it adds up to an exact small-scale replica of the original.

In the sail loft, meanwhile, the linen panels are fitted with grommets and reef

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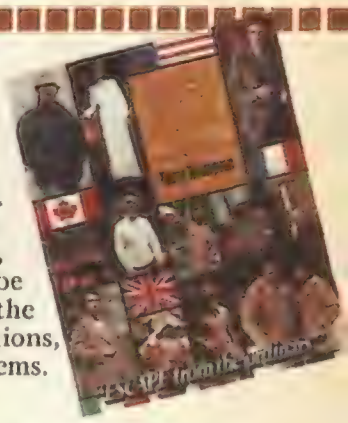

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points and other salty devices. The sails are then set and the vessel voyages in its area of the Arts and Industries Building, its brightwork gleaming, its "canvas" snowy, its guns peeking from their ports —a stirring sight for Old Salts.

The craftsmen who do this detailed, loving work are mostly rather anonymous, but a film about these restorations is being put together by the Smithsonian, which will do much to pull their lights from under their bushels. I watched a crew at work filming some restorers presumably setting up the three giant totem poles that appeared in the 1876 exhibit.

The actors or staff workers—whichever they were—wore 1870s workmen's clothes which made them look like those caricatures of Irishmen that illustrated old-fashioned jokes about what Pat said to

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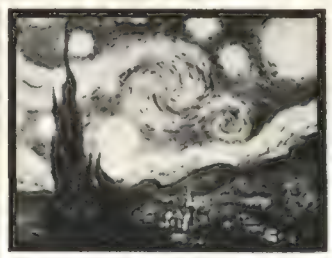

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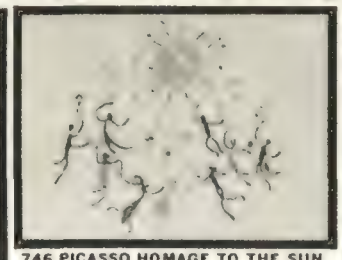

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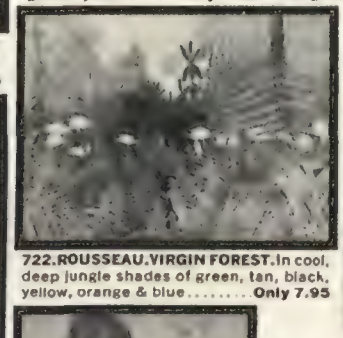

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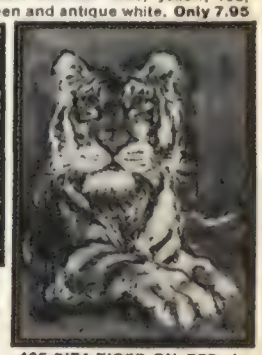

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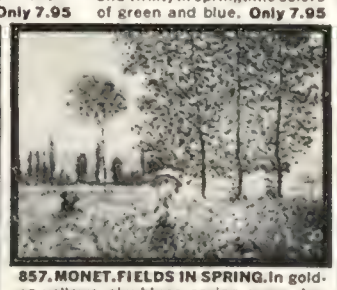

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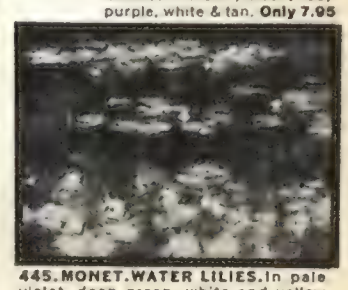

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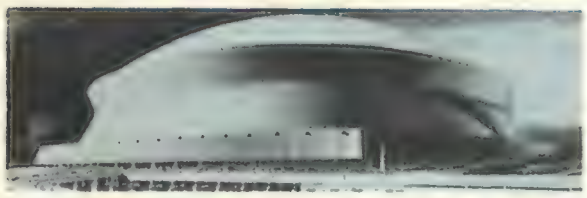

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Mike. I found the scene charming and nostalgic, which indicates that I, too, belong to the past.

In case you thought that the Peace Corps had folded its tents and stolen away, I can report that one of its programs is alive and kicking at the Smithsonian. The Peace Corps Environmental Program has 126 projects in the field right now, in 55 countries. All are jointly run by the Institution, and to discover just what that means I called on Jim Sherburne and Larry Ritter, manager and information officer, respectively, of the program. What the Smithsonian does, in effect, is to set up projects dealing with natural resources in various areas, get together qualified Peace Corps volunteers for each assignment, then evaluate results.

Most of the countries our people work in seem to be in western and central Africa, and Larry Ritter is there right now. But there are also projects in South America to save the caiman, that jumbo-sized crocodilian of the Amazon, and in the Philippines where the monkey-eating eagle is in trouble.

Specific programs enjoy other backing besides that of the Smithsonian. The World Wildlife Fund and the African Wildlife Leadership Foundation, for example, have a stake in some. These environmental projects generally demand some special training from the National Park Service, too.

The result of this specialization is that, though the Peace Corps is still active, the old-time volunteer clutching his B.A. finds he or she needs a little more knowledge to work in one of the environmental programs. The people who are trying to control a water fern infestation in Botswana, studying the quela bird in Ghana, checking the purity of rivers in Iran, investigating the Sumatran rhinoceros in Malaysia and the black rat in Ecuador, are mature and highly qualified. "A Bachelor of Arts alone isn't enough," Dr. Sherburne told me. "For most of the environmental assignments, a Master's in your specialized field is required."

Thus time grinds complainingly on.

Speaking of time's remorseless journey, it seems only perhaps a half-hour ago when we at the Smithsonian—and a good many others in the city of Washington—were pleased and entertained by the knowledge that we had not bats in the belfry,

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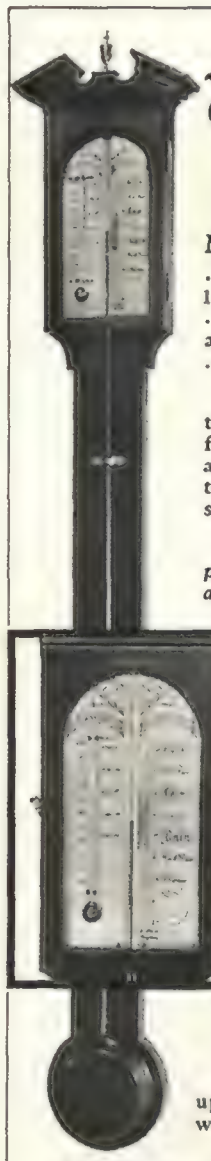

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but owls in a tower of the castle. This past Christmastime, just as the Audubon Society was holding its famous annual Christmas bird count, the Smithsonian followed suit. Edward F. Rivinus, acting director of the Smithsonian Press, was dispatched upward, clad in a hard hat as protection against falling objects. The result of this, the world's smallest Christmas bird count, was a couple of pigeons, irate at being disturbed when they were just trying the keep out the cold, one egg of indeterminate age—and no owls.

This was distressing, especially since a letter had come in from a chicken farmer in Maryland, blaming the Institution for allowing its owls to hunt chickens—at least this farmer's chicken.

Since these were barn owls which don't eat chickens, the authorities at the Institution felt relatively blameless, but they have agreed that if the owls come back, they'll have to wear a little Smithsonian patch—like the guards.

There's something else that seems to be missing from the castle. No sooner had we published our story of James Smithson's bones last month than we were told of the abnormalities that seem to have occurred around the tomb.

This is all utter nonsense, of course, but professional thoroughness impels me to report that for quite a while—actually ever since the bones were brought here—strange things were noted. Guards late at night would see the automatic elevator shut its doors and go up to the fourth floor as if someone had pushed the button there. But then—well, I know this is silly—it just wouldn't ever come back *down*, you see. So the guards would wander around trying to find who was up there.

That's right. No one.

Then there was the matter of the electric typewriter. They're fine big machines, heavy and steady. But this one that happened to be in the room above the Smithson tomb would—look, I'm really embarrassed to go on with this foolishness—it would sort of jump around while it was being used. That's a thing those big machines don't do: jump around.

Anyway, we told you last month about how the bones were sorted out and investigated by the scientists at the Institution and then put back neatly in the tomb.

Since then there hasn't been anything odd happening in the old castle.

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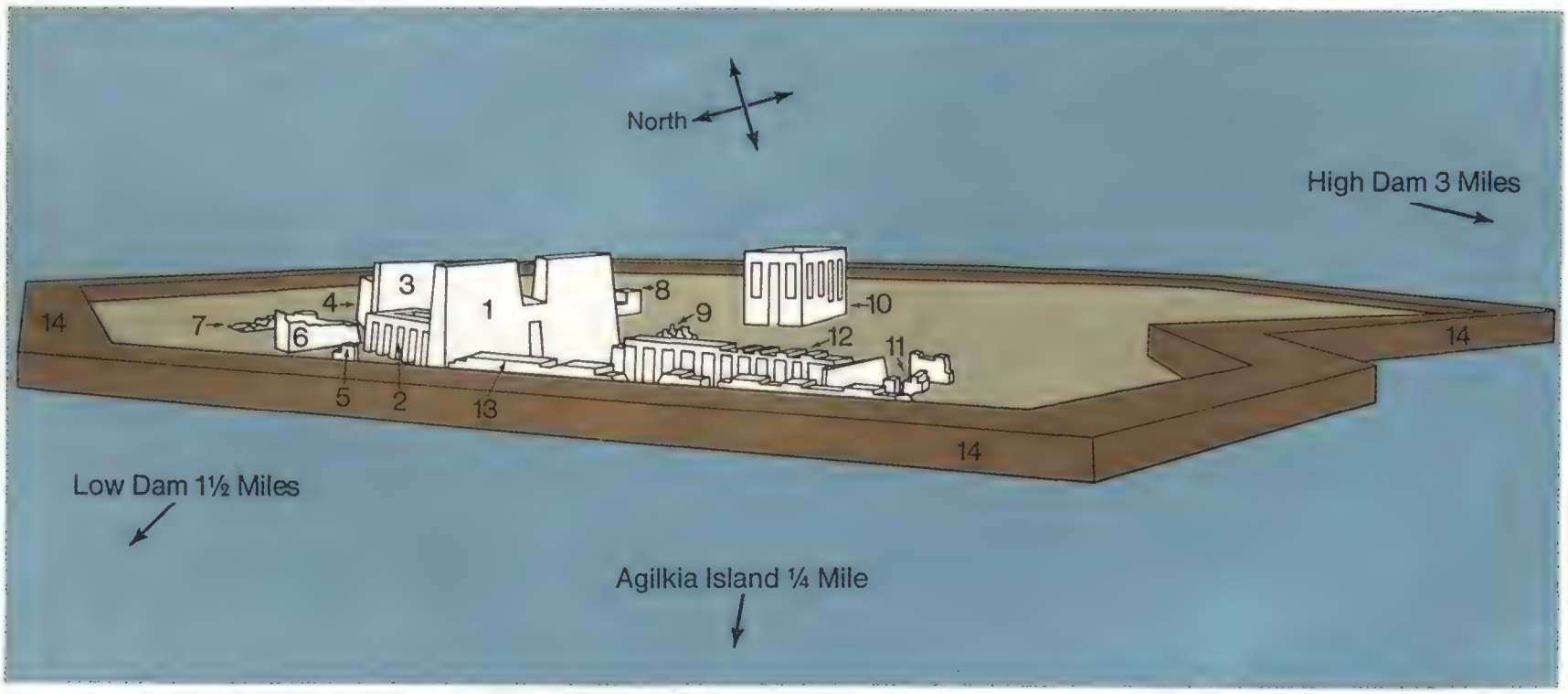


Plan of Philae, showing some of the monuments and features seen in the photograph at the top: 1-4, Temple of Isis (1, First Pylon; 2, Temple of Isis-Usret—Birth House; 3, Second Pylon; 4, Sanctuary of Isis; 5, remains of Temenos wall; 6, Gateway of Hadrian; 7, site of Temple of Har-ned-Iôtef; 8, Temple of Hathor; 9, Temple of Imhōtep; 10, Kiosk of Trajan; 11, remains of Temple of Ar-hes-nefer; 12, East Colonnade; 13, West Colonnade; 14, temporary coffer dam of steel pilings and sand fill.

Philae in late afternoon shows progress of work before scaffolding. It was surrounded by coffer dam 30 feet wide and water was then pumped out, allowing the monuments to be dismantled.

By Alfred Friendly

Philae, 'the Pearl of Egypt,' is being lifted to a dry and safe setting

Trapped between the old Aswan Dam and the new High Dam, precious temples are being saved by international effort

Photographs by Dmitri Kessel and Alexis N. Vorontzoff

Rescuing Philae, 'Pearl of Egypt'

During an early stage of the operation, sand is being pumped into the space between the two walls

Human immortality lying beyond our reach, there is precious little we can do, except perhaps to understand and to mourn, about John Donne's dictum that the bell tolls for each of us the death of every man. Happily, though, we *can* provide something like immortality by preserving—for some generations to come—the great works of Man. The rescue of Philae, "the Pearl of Egypt," from drowning is an exhilarating example of that kind of accomplishment, heartening testimony to what can be done when men of all nations set their hands to it.

Early this century, when Pierre Loti visited Philae by dusk and moonlight, he fancied he saw the great goddess Isis looking sadly into the mirror of her death formed by the Nile waters rising toward the top of her temple, and himself felt *"le coeur serré par tant de vandalisme utilitaire"* (heartsick over so much utilitarian vandalism). Had he lived another 50 years, he would have found his lament exuberantly invalidated. The utilitarianism was realized, but the vandalism was forestalled. Stone by stone, building by building, all the temples and pavilions, the gates and the colonnades and the nilometer on Philae are being painstakingly dismantled, moved and then reassembled a few hundred yards away on another island, remade into a duplicate of their original home but safe from inundation. Once again landscaped with palms and exotic plants that made it one of the beauty spots of the world, Philae will be seen in a loveliness it has not possessed for three-quarters of a century.

In the staggeringly ancient time scale of Egyptian monument building, the constructions of the little island of Philae just above the First Cataract of the Nile, 400 miles south of Cairo, are almost recent. There are a few remnants of buildings from the seventh century B.C., but the glory of the site, the sanctuary of Isis, was begun by Ptolemy II Philadelphus, son of Alexander's general and satrap of Egypt, in the third century B.C. Herodotus, who journeyed up the Nile about 450 B.C. to within four and a half miles of the spot, never mentioned it, which suggests that as of then it was of no consequence.

But if the constructions are "late," *i.e.* from the Ptolemaic to the end of the Roman period, Philae is uniquely beautiful in its siting, its exquisite structures and its ornamentation. It is fascinating in its demonstration of the instant achitectural, decorative and even religious triumph of the vanquished Egyptians over the victorious Macedonians. As Abdin Siam, the young Nubian supervising archaeologist for the

As the result of an earlier trip to Egypt, Alfred Friendly described the futile search for Imhōtep's tomb in the August 1973 issue of SMITHSONIAN.

Formerly the Kiosk of Trajan was submerged for several months of the year by impounded waters of the Aswan (Low) Dam. Today (below) it stands high and dry within protecting walls of coffer dam.

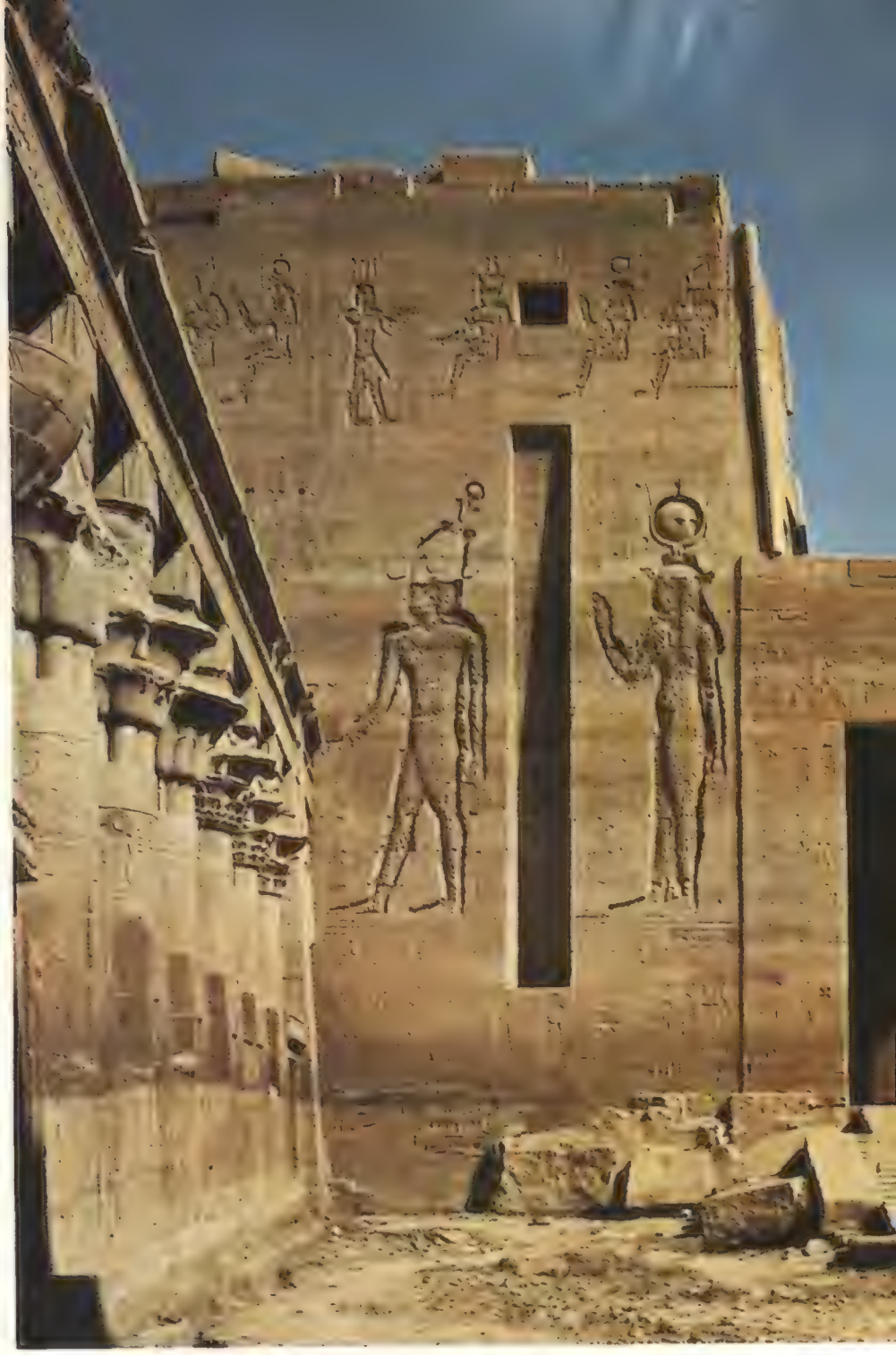
of the coffer dam. At left is the First Pylon of the Temple of Isis, with Second Pylon behind it.

Egyptian government at Aswan, puts its proudly: "The Greeks conquered us by their force; we conquered them by our culture."

Lost to the eyes of the West for 1,500 years, the "pearl" was rediscovered by those indefatigable savants whom Napoleon brought with him on his disastrous military expedition to Egypt in 1798. Ever since it has been a place of archaeological pilgrimage for Europeans as it had once been the goal of religious celebrants of Pharaonic Egypt.

What looked to be its nemesis came a century later with the proposal to build the first Aswan (Low) Dam. In the eyes of the country's real sovereigns, the British, the dam appeared inescapably necessary for power, flood control and irrigation. But the lake that would form behind it would mean the submersion of Philae, lying a mile and a half upstream.

To efface pagan gods, Christian Copts carved their form of the cross on reliefs of Isis and Osiris.



The Copts also defaced the reliefs of Osiris and Isis (to left of doorway) on Second Pylon. Figures at right represent cow-goddess Hathor, falcon-headed god Horus and Ptolemy XIII bringing offerings.

So anguished were the protests of the Egyptologists that original plans for a dam 127 feet high were revised to prescribe one of 100 feet; this would leave the island submerged only three months of the year, during the high-water season, but at the expense of the volume of water that could be stored. Winston Churchill, whose acute sense of history would seem not yet to have developed, barked: "This offering of 1,500 millions of cubic feet of water to Hathor by the Wise Men of the West is the most cruel, the most wicked and the most senseless sacrifice offered on the altar of a false religion. The State must struggle and the people starve, in order that professors may exult and tourists find some place to scratch their names."

In the quarter-century to come, the Churchillian viewpoint and Egypt's inexorable economic needs were in the ascendant. The height of the Aswan Dam of 1902 was raised in 1912, again in 1929. Philae all but disappeared under the waters for nine months of each year. It was wholly visible only during the summer months, exactly when the temperature rises to heights of 115 F or thereabouts, making sightseeing virtually impossible. But at least the structures and their linear miles of carving were saved for the study of such Egyptologists as were hardy enough to brave the furnace.

But with the decision in the 1950s to build the High Dam, Philae seemed destined for total loss. Lying between the High Dam and the Low, it would eventually be undermined by the intervening lake, kept at almost the same level yearlong to permit efficient generation of power from the turbines of the lower dam. The alternatives for its rescue were either to dam it off from the lake around it or to remove the entire complex to high land. Both were hideously expensive, far beyond the resources of Egypt to do on its own.

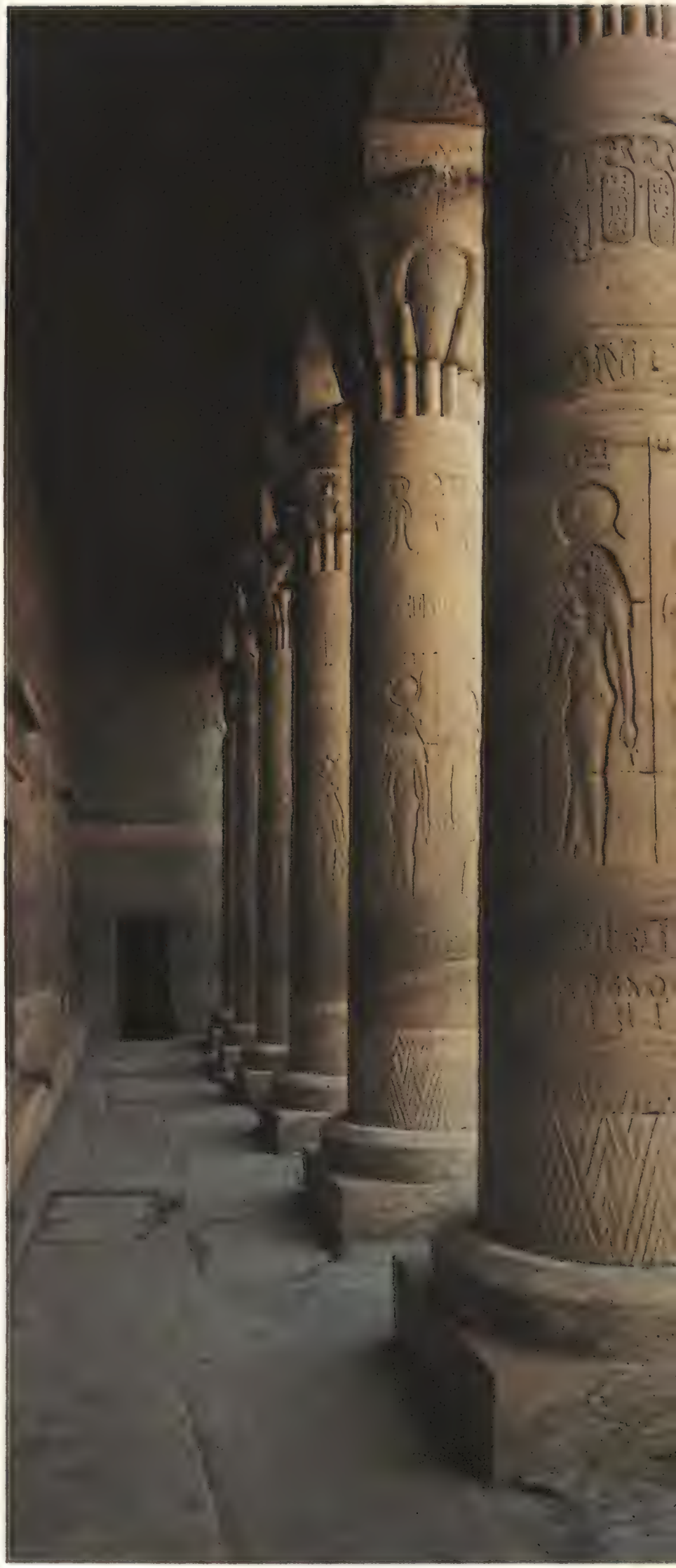
Once again, the Egyptologists roared, and again effectively. Their concern was not Philae alone. Building the High Dam would mean that *all* archaeological work on Nubian sites, for some 300 miles southward along the Nile between the First and Third Cataracts, would be ended forever as the reservoir of Lake Nasser-to-be rose above them. The governments of Egypt and

Sudan appealed to the United Nations Educational, Scientific and Cultural Organization. Its director general in 1960, Vittorino Veronese, saw the issue in the terms of Donne rather than Churchill:

"These monuments . . . whose loss may be tragically near, do not belong solely to the countries who hold them in trust. The whole world has a right to see them endure. . . . When a thing of beauty, whose loveliness increases rather than diminishes by being shared, is lost, then all men alike are the losers."

The response to UNESCO's appeal should make all civilized men rejoice.

The proposal to build the Low Dam at the turn of the century had stimulated a magnificent survey of Philae by Capt. H. G. (later Sir Henry) Lyons of the British Royal Engineers; his resulting volume remains authoritative. The heightening in 1929 led to an unrivaled expedition of discovery, excavation and recording by the late Walter B. Emery of the British-financed Egypt Exploration Society (see SMITHSONIAN, August 1973). From his work and that of other archaeologists



Eastern Annex columns: Lion-headed goddess Sakhme is nearest, next is defaced, third is goddess Nephthys.

Capitals in many forms top the columns on Philae. This, at Kiosk of Trajan, combines lily and papyrus.

rushing to the sites upstream before they would be flooded, no less than 40 volumes of studies have already appeared.

But these efforts pale before results of UNESCO's urgent appeal. The International Campaign to Save the Monuments of Nubia raised a total of almost $35 million from governmental and private contributions throughout the world (other large amounts came from Egypt and Sudan). No less than 24 nations sent expeditions to survey, excavate and record all the threatened sites south of the High Dam. Labib Habachi, dean of Egypt's archaeologists, believes that as a consequence more is known about the history and archaeology of Nubia than of Egypt to the north.

Moreover, 22 temples and two other monuments—all that were worthy of being saved—have been moved, piece by piece, to high ground near the ultimate level of Lake Nasser or, as was the case with four, sent piecemeal to the West for reconstruction. One is in the Metropolitan Museum. The most famous of this series of projects is, of course, the raising of the two temples at Abu Simbel to a cliff site 200 feet above their original setting.

The last of these several salvation enterprises of the Nubian Monument Project is Philae. It was determined that the idea of leaving it in the lake surrounded by a coffer dam was impossibly expensive, and would entail pumping out seepage in perpetuity. Instead, the plan adopted was to enclose the island inside a temporary coffer dam, pump it dry, and then remove every stone of every structure and pavement to a storage area on the mainland, whence it would later be transferred to and reassembled on the loftier island of Agilkia, a quarter-mile away. More than $8 million has been received or pledged for the work. The project may well cost $15 million before it is finished, with the United States possibly paying half the total (the Smithsonian Institution has already disbursed $2 million).

An Egyptian construction organization undertook the protection of the island of Philae by the coffer dam. The first step was to pump a sludge of water and sand from a pit on the mainland through five miles of huge pipes to form a base into which to drive the 3,115 steel planks, each one-and-a-half tons and 56 feet long, that form the sheathing. They were put down in two roughly concentric circles, about 30 feet apart and 2,600 feet in circumference, and girded with a steel belt. More than 1 million cubic yards of sand was needed for the base and the fill between the two circles of piling. All this was done while Philae was under water, submerged as it was soon after the High Dam was finished. Then the water inside the coffer dam was pumped out and Philae reemerged, below the level of the lake.

Meantime, the island of Agilkia, the Philae structures' new home, had to be lowered by about 100 feet and slightly enlarged so that its contours would duplicate those of Philae. Some 270,000 cubic yards of granite had to be removed.

An Italian company, Condotte-Mazzi, was put in charge of the removal of the buildings and their reconstruction on the new site. It was obliged to survey and map each temple, road, wall and column, and number every stone for its exact restitution. The estimate, which may be wildly inaccurate, is that the transfer entails the removal of 40,000 blocks of stone. As distinct from Abu Simbel, where the great facades and temples were carved from solid rock, thus necessitating cutting the whole thing into 1,000 pieces for raising and restoring on the cliff above, there are no

Each column of Kiosk represents bundle of plants tied at the top—here, papyrus and palm fronds.

The wide fan-shaped elements on this capital from the Hypostyle of the Temple of Isis are papyrus.

monolithic columns or walls on Philae. Each building block—some very large, to be sure—needs only to be separated from the neighboring stones to which it is mortared and later reassembled. When the job is finished, the steel pilings will be pulled up and Philae will again be flooded for as long as there is a Nile.

The 70-odd years in which Philae was alternately submerged and laid bare have exacted a toll from the decorations that adorned the whole; drawings of early travelers suggest that they were colorful—gaudy may be the right word—in the extreme.

The dismantling of Philae began last September 9—"by accident," according to the resident managing engineer of Condotte-Mazzi. "We were ready to start a long time ago," he said, "and we were waiting for a go-ahead signal from Cairo. Then one day an Egyptian television crew came from Cairo to Philae. They asked us to move a few stones for them just for the pictures. So we did, and then kept on going." The stones are moved by barge to the storage area at Shellal Station, west of Philae, where they will wait until the island of Agilkia is ready for them. The Italians are confident that they can have the whole complex dismantled in about a year—15 months at the most.

Today's visitor sees Philae from a distance as a low-lying island, the pylons of its great temple and the tops of other buildings rising above the level of the steel-and-sand girdle. One put-puts across a few hundred yards of the river, climbs to the top of the coffer dam, and gazes on a welter of monumental buildings resting on the mud—the seepage continues and so must the pumping—30 or so feet below. A few score work-

A lily-and-papyrus capital in the Birth House is surmounted with an image of the goddess Hathor.

Workers carry baskets of mud from Great Western Colonnade before Temple of Isis. This age-old method of excavation recalls similar scenes among reliefs on many ancient Egyptian monuments.

men, toting mud up the ramps in leather baskets in the timeless custom of Egypt, seem lost in the grandeur of the central structure, the huge temple of Isis, and the mighty colonnades leading to it and inside its courts. Yet, at second glance, the enclosure gives the impression of teeming with inhabitants: On the columns, on the facades of the two huge pylons of the temple—the larger, the First, is 148 feet wide and 59 feet high—there are hundreds of figures, deities and kings, worshipped and worshipping. It is as though the face of no stone was left bare, but incised with shapes and hieroglyphics.

The Egyptologist, no doubt, might see a slight Hellenistic influence; the less instructed eye will see what strikes him as pure Egyptian artistry—the absence of any attempt at perspective in the reliefs, the figures exclusively in profile, the short Egyptian skirt and bare torso, the outstretched arms and legs and the overpowering headdresses, whether the symbols of the gods or the crowns of the pharaohs.

The sanctuary is that of Isis who, in the impossibly complex Egyptian theology, set about recovering the pieces of her dismembered husband-brother Osiris and reassembled them. Within the temple there is a separate building, their son Horus' Birth House, magnificent but dwarfed by the surrounding complex. But even though Isis was the patroness, she and her kin were only a few of the deities worshipped at Philae. (The magisterial *Topographical Bibliography* of Egypt devotes 53 closely printed pages to the mere shorthand listing of the carvings and hieroglyphics of the deities in the Egyptian pantheon.)

As noted, it was Ptolemy II Philadelphus who began the building of the great temple and, as might be expected, he and his successors take pride of place on the pylons, in huge reliefs, worshipping gods and offering congealed masses of prisoners, held neatly by the collective tufts of their hair, to Isis and Hathor, goddess of love and happiness.

Here, and lamentably often elsewhere in the Philae temples, the great figures, carved in relief, have been partially or wholly defaced by the Copts (pp. 46-47), who seem to have spent almost as much effort at destruction as the Egyptians in creation.

The old Egyptian religion hung on for a long time in Upper Egypt. The region lay far beyond the reach of the early Christian proselytizers and of Emperor Theodosius' formidable "enforcers," who set out to

A bulldozer is leveling space on Agilkia Island, where the temples of Philae—lying just above the water in background—will be reassembled.

Stone drums from Eastern Annex are lined up on barge. The painted lines will facilitate reassembling on Agilkia Island across the water.

scourge paganism and all its works from the Roman Empire after his edict of A.D. 380. But when Christianity did come, in the sixth century A.D., it held on for a millennium, and the Copts who brought it and built a mud-brick and stone village on the island did the best they could to erase the heathen representations. Fortunately for our pleasure, the task was far too enormous for them.

The Nile, whose god was one of those worshipped there, ultimately took his revenge. His waters, rising and falling behind the Low Dam during the first years after its construction, swept away the mud-brick village and, alas, much else of value.

The embellishment of Philae is so rich and abundant that each visitor can find his own particular and different treasure. For me, it is the columns, 46 on the east and west porticoes leading to the Isis temple, 21 in the Birth House, and 10 in the Forecourt. Granted, they are squatter than the soaring pillars at Karnak and less well-proportioned than those of Greek and Roman temples. Their glory, though, is their capitals (pp. 48-49), none—or so it seemed to me—duplicates. Lilies and palmettes are blended in dozens of different combinations and proportions with the Egyptian lotus and papyrus in delightful harmony and invention. Some, to be sure, such as those in the Birth House, are remarkably ornate, with a stylized head of Hathor carved above the capital and below the entablature. But there is no law against being amusing, even if the Horus-worshippers intended no such thing.

Of the many other structures on the island, the most famed and admired is the second-century A.D. Kiosk of Trajan (p. 45), but I confess to a minority view. The facade is certainly unique: rectangular walls solid up to a third of its height, then columns, then ornate capitals and then square pillars half the height of the columns below and, finally, a very heavy entablature.

Each to his taste. But no taste can be so dull and narrow as not to find most of Philae beautiful or at least breathtaking in monumental grandeur, powerful here, delicate there.

That it is being preserved—not "restored"—can be seen as a triumph of human values. We are entitled to boast that we have progressed, if only by a little here and there, beyond the Vandals, the Iconoclasts and Cromwell's soldiers, who in their time despoiled the monuments and religious art of Rome, Byzantium and medieval England.

Primatial Cathedral, Toledo, Spain

Four-and-a-half feet of gem-studded, gold-embellished silver, made by Neapolitan Lorenzo Vacarro in 1692, composes an exotically allegorical America. A magnetic figure wielding a barbarous arrow, she commands a globe balanced atop a cluster of alligators.

By Hugh Honour

America as seen in the fanciful vision of Europe

Allegory, myth and fantasy characterized visions of the New World as imagined by Old World artists over the centuries

"It needs to be painted by the hand of a Berruguete or some other excellent painter like him, or by Leonardo da Vinci or Andrea Mantegna, famous painters whom I knew in Italy," wrote Fernandez de Oviedo in the 1530s. He was trying to describe an American plant so strangely unlike any to be seen in Europe that he was uncertain whether it was a species of tree or some monstrous anomaly of nature. Nearly three centuries later the great German explorer and scientist Alexander von Humboldt was still calling for painters capable of doing justice to America.

Both men were keenly aware of how different it all was from everything in Europe. And from their writings some sense can be gained of what Europeans felt at first sight of that "fresh, green breast of the new world," when, for a transitory moment, as Scott Fitzgerald wrote, "man must have held his breath in the presence of this continent, compelled into an aesthetic contemplation he neither understood nor desired, face to face for the last time in history with something commensurate to his capacity for wonder."

Some of that wonder is captured in a Bicentennial exhibit at the National Gallery of Art until February 15, when it moves to the Cleveland Museum of Art, which organized it, then to the Grand Palais in Paris.

The recent discussion as to whether Europeans discovered or, as the Mexican historian Edmundo O'Gorman argues, "invented" America serves as a reminder of the way in which the New World was revealed: not suddenly with the news of Christopher Columbus'

Artemis S.A., Brussels

King Louis XVI ordered a series of tapestries and chair coverings, of which this, *America,* was a major work, as a gift for George Washington. They were never delivered; the French Revolution intervened.

landfall, but very gradually over the course of more than half a century. It was not until 1507 that Martin Waldseemüller charted a single landmass by joining up the various "islands" which had been explored on the far side of the Atlantic, not until 1522 that this continent's separation from Asia was established by the first circumnavigation of the globe, not until the 1550s that its discovery was hailed as "the greatest event since the creation of the world, excepting the incarnation and death of Him who created it." But as early as 1493 Columbus's first letter had conjured up for Europeans an image very different from any that he had in fact seen in the "Indies." Thus a myth preceded awareness of the reality of America.

Columbus believed he had reached the Spice Islands, which were well known to Europeans from the books of Marco Polo and especially Sir John Mandeville, whose fantastic account of the marvels of the East had often been no less fantastically illustrated. But the phrases in which Columbus described these islands recalled those used by Latin poets in their evocations of the Hesperides or Islands of the Blest, where eternal springtime reigned, and men lived as they did in the Golden Age, without toil or strife.

Amerigo Vespucci, like Columbus, believed that he had reached the shores of Asia, but his more vividly colorful letters gave much greater scope for the imagination—and for his illustrators. Yet the nudity, free love, longevity and absence of both property and laws which he stressed were all features of the Golden Age,

while anthropophagy, on which he dwelt in gruesome detail, was known from both Mandeville and classical literature. In only one important respect did these people differ from the races of man previously described—in the use of feathers for such scanty garments as they wore.

The Indian in a feather headdress—and usually a feather skirt, with which the European imagination had endowed him—made a prompt appearance in works of art. He figures in a very early 16th-century Portuguese painting as one of the Magi. He characterized the native population on maps of America which were intended to provide information about the population as well as the coastline of the New World. From the 1570s to the early 19th century, a woman decked in feathers symbolized the continent in innumerable allegorical paintings and sculptures—like the magnificant statue in silver by Lorenzo Vaccaro (p. 54). From its appearance in works of art the image passed into literature.

Francis Bacon speculated on why Indians wore feathers and concluded that it was because their ancestors had taken refuge from The Flood in mountains and "were invited unto it by the infinite flights of birds, that came up to the high grounds, while the waters stood below."

While feather headdresses and cinctures indicated the alien and exotic characteristics of the Indian, however, the nakedness of the rest of their bodies permitted their assimilation into the classically based European tradition. Artists depicted them with the proportions and poise of Greek and Roman statues, and in this way played a part of some importance in the diffusion of the myth of the "noble savage." A curiously bifocal vision of the New World came about, a vision in which everything that seemed odd if not

British Museum

In little English engraving of 1778, America, as an Indian, saws away at English commerce, shown as a cow.

Fogg Art Museum

Edgar Degas visited relatives in America in 1872 and painted *Cotton Merchants in New Orleans* in 1873.

anomalous to European eyes was gradually superimposed on that Golden Age idealization of Europe which the first explorers had created.

The popular 16th-century taste for exoticism, initially inspired by the work of naturalists, was also an expression of a European feeling of superiority over the rest of the world. Exotica gave a delicious yet reassuring *frisson* of pleasure because of their deviance from the European norm. Thus, feathered Indians quickly took their place alongside chinoiserie mandarins, delicately modeled or painted on porcelain, cast in ormolu or chased in silver, peeping out of rococo scrolls on gilt and enameled snuffboxes, brandishing their tomahawks among wispy plants on embroidered silks, even serving as the richly gilded supporters of a ducal carriage. In allegories of the continents, of course, any suggestion of equality would have been quite out of place; Europe was always the presiding figure. It was in such allegories that America and Americans were most frequently depicted in the art of the 17th and the first half of the 18th centuries.

In the hierarchy of continents, America occupied the lowest place, the last to have been discovered and also, some thought, the last to have been created. Emerging from the waters later than the other continents, it had not as yet completely dried out. It was

English art historian Hugh Honour, guest curator of the exhibition, wrote the catalog, distributed by The Kent State University Press, which accompanies it. This article in an adaptation of the introduction.

Derby Museums and Art Gallery

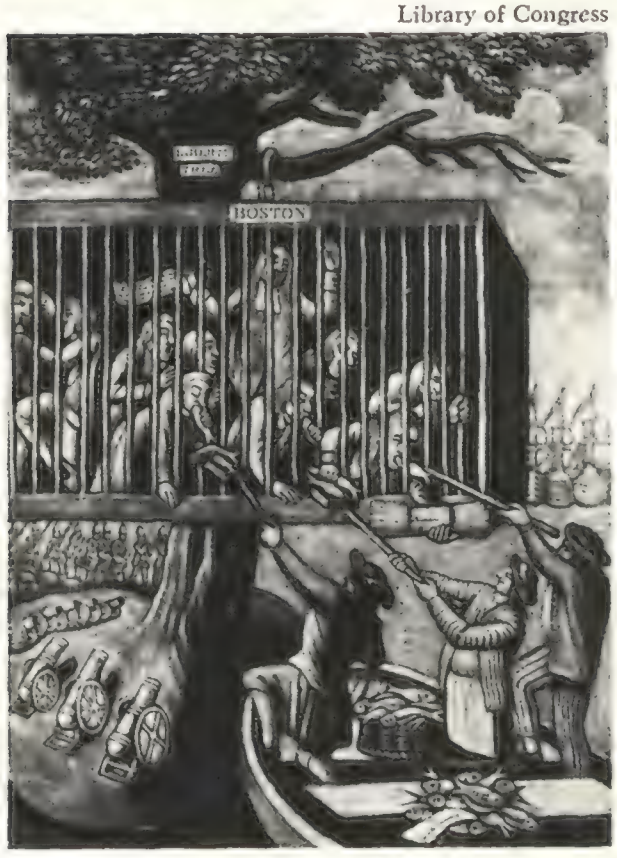
Joseph Wright of Derby, associate of the Royal Academy, painted *The Indian Widow* in 1784-85.

"that unripe side of earth," as John Donne called it. The ease with which its inhabitants had been subjugated seemed to prove their inferiority. And in the mid-18th century the great French naturalist Georges Buffon declared that the wildlife of South America was not only different from, but inferior to, that of the Old World—with the notable exception of reptiles and insects, which were both larger and more venomous.

This revelation of how far America had fallen short of being the best of all possible New Worlds—with its implication as to the impotence or inadequacy of the Creator—won immediate acceptance among the "Enlightened." The argument was taken a stage further in 1768 by Cornelius de Pauw, who declared that in the unsalubrious climate of the American continent all mammals degenerated, not excepting Europeans who settled there; "It is without doubt a terrible spectacle to see one half of the globe so disfavored by nature that everything there is degenerate or monstrous," he wrote. The allegorical figure of America with her alligator may thus have seemed to acquire a derogatory significance, especially when set beside Europe with her bull, Asia with her camel and Africa with her lion.

Less than a decade after the publication of de Pauw's book, Europeans were, however, provided with a spectacle which seemed to contradict his theory, at least as far as American Colonists were concerned. The interest aroused by the American Revolution was reflected in a wide variety of works of art, ranging from satirical prints to grandiose allegories, from battle scenes to portraits. In the allegories and even in the cartoons, America continued to be represented by the exotic feather-cinctured Indian, often shown now in the company of such figures from classical mythology as wise Minerva and Mercury, the patron of commerce. The old idea of America as an extension of Europe was thus brought up to date. Nor was this inappropriate, for the war in America was often seen as one between France and England. In several French allegories, including the tapestry which Louis XVI in-

Library of Congress



British Library

Prints accompanied American story from the start. An Italian view of Columbus, 1493, is flanked by 18th-century English comments; frequently sympathetic to Americans, they could employ sharp satire.

British Museum

tended to give George Washington (p. 55), the Bourbon Minerva confronts Britannia. Others show France securing the freedom of the seas—for French trade—rather than the liberty of the Americans as the happy outcome of her intervention. But outside court circles some Europeans seem to have read in the Revolution omens for the future of their own countries. A very popular print, "The Tea-Tax-Tempest," likened the Colonists' struggle for political independence to that of the Swiss in the 13th century and the Dutch in the 16th. "It is impossible not to hope that this people may attain the prosperity of which they are susceptible," A. Turgot wrote in 1778. "They are the hope of the human race; they may well become its model." At the same time British caricaturists, nearly all of whom opposed the policy of George III and his ministers, represented the war in America as part of a larger conspiracy against the liberties of British subjects on both sides of the Atlantic.

As a result of the Revolution, the two images of America as an exotic land and as an extension of Europe became separated, the first being now associated mainly with Central and South America, the second almost exclusively with the United States. As the latter played a far more prominent part in European life, it soon acquired the name formerly applied to the continent as a whole. William Blake's strange, prophetic poem inspired by the Revolution is simply entitled "America." Goethe began his famous lines "To the United States" with the words: "America, you are better off than our old continent." But to many European artists the vision of a primeval exotic south proved more attractive than that of the land of the future in the north.

Artists seem to have been drawn ineluctably toward the one remaining exotic element in the North American scene—the Indian. He was the subject of all those works in which major 19th-century European artists essayed American themes—Goya, Girodet, Delacroix, Doré. But the Indian was no longer simply a picturesque figure. Like the American continent itself, he was at the same time familiar and alien, a projection of European dreams and fears. From the 16th century onward, he had been associated with the Scythians as described by Herodotus and Cicero and the Germans as described by Tacitus, or else with the wild men of the woods of medieval legend and poetry—the embodiment of either the highest natural virtues uncorrupted by luxury (the noble savage) or of the basest human passions unrestrained by law and religion. The former view, though given notable literary expression by Montaigne and later by others, was diffused mainly by missionaries, especially the Jesuits in Canada. The latter view was that generally held by laymen, who agreed with Thomas Hobbes that the life of "the savage people of America" was "solitary, poor, nasty, brutish and short." This was an image which had scant appeal to artists, apart from Goya. In works of art the idealized image of the Indian prevails, especially in the late 18th century, when a "return to nature" was as important a tenet of neoclassical doctrine as the "return to the antique." Joseph Wright's *Indian Widow* (p. 57) is, above all, a moral exemplar.

Indians dominated the European artist's view of America for most of the 19th century. The vision of the United States as a land of liberty and opportunity, which shone so brightly all over Europe, found no worthy artistic expression in the old continent.

It seems to have had little appeal to Edgar Degas who went to America in the fall of 1872. He went to visit his relatives in New Orleans and, during his few months there, portrayed them and their friends in pictures which bring us vividly into the closed and sultry social milieu in which they lived.

The European visual image of America was created largely by artists who never went there. As the exhibition shows, many of them were among the greatest—Burgkmair, Holbein, Rubens, Tiepolo, Goya, Delacroix. This vision, conjured up from fact and fantasy, taking its form from Europe and only its coloring from America, accounts for several misconceptions which still survive. Yet it has its own artistic validity—most notably as the expression of European dreams of a terrestrial paradise or of a Golden Age, an exotic world where everything is strange and bright, the setting for tales of adventure and for an ideal society.

Bibliothèque Nationale, Paris

America is South as well as North, and this richly decorated map, of watercolor on vellum, 16⅜ x 23¼ inches, was part of a famous Portuguese atlas.

Tabula hec Regionis magni brasilis est · ⁊ ad partem occidentalez
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CLIMA

Is the leg mightier than the atom?

Before you say no, keep in mind that we know very little about many forms of energy available to us.

Including good old muscle power.

For too long a time we've relied on oil and gas to serve our needs, and failed to take full advantage of other sources of power.

Including the atom.

But recent events make it clear we must learn about all the options, and how best to apply them.

At Union Carbide we're studying a wide range of energy technologies and resources for the Energy Research and Development Administration.

From something as basic as bicycling to the complexity of controlling nuclear fusion.

For instance, we are learning how to turn coal into oil and gas in a way that is practical economically.

We're deeply involved in nuclear research, particularly in finding ways to make this important source of energy safer and more efficient.

Our work in fusion power, at Oak Ridge, Tennessee, offers the most exciting possibility for the future: the ultimate source of inexhaustible energy.

If we succeed, there will never be another energy crisis.

But for the present, the answer to our energy dilemma is not likely to come from one source, but many. All the way from the leg to the atom.

UNION CARBIDE

Today, something we do will touch your life.

By Ron Chernow

Colonies in space may turn out to be nice places to live

A physicist suggests we migrate into space rather than to other planets, and pay the bills by beaming clean energy to Earth

At the start, a bulldozer will mine the plains of the moon, scooping out the dust, the raw material of Chaos, from which will be fashioned another world. Operated by Earthlings in a nearby control booth, the machine will dig an open pit the size of several football fields. This primeval moondust will be sintered by the sun into 20-pound chunks that will form the building blocks of colonies in space.

The lunar payloads will be put into buckets that will be sent racing down a track. Taking advantage of the moon's weaker gravity and lack of atmosphere, this cosmic slingshot will catapult half a million tons of lunar blocks to the Earth's first space community—about a quarter of a million miles away. When the bucket attains a velocity of a mile-and-a-half per second, the bucket will suddenly slow enough to release the load and send it soaring into space. Every second

The view inside a 19-mile-long, 4-mile-wide space colony might look like this. But the moon would never be seen behind the Earth.

In a closer view by another artist, the bridge in the middle distance is comparable in size to the San Francisco Bay Bridge.

another payload will shoot off into space in a steady stream of "bricks."

There is a point in space that scientists call L_5, one of two sausage-shaped limbos in which an object can orbit forever, delicately balanced in the gravities of Earth and moon. The Earth, the moon and L_5 together form an equilateral triangle. A space colony set in orbit at L_5 could circle the Earth for eternity. At a point midway between the Moon and L_5, a space tug will catch the lunar bricks in flight and ferry them to a special construction module already in orbit at L_5. A crew of 2,000 workers will then spend three years breathing life into the dead dust of the moon and creating the first new world for mortals in the cosmos.

Like a spider spinning a web from its own entrails, each colony will spawn another colony. They will be self-supporting, self-perpetuating, independent worlds, enclaves of the Earth in space. One day space colonies will cluster as thick as stars in the nighttime sky. Tens of thousands of glowing cylinders will be spinning around the Earth, billions of people will be living in space and our small and overburdened planet will have a chance to recover.

This view of new, self-sufficient worlds in space is not an idle, science-fiction fantasy. Rather, it is the detailed program for space colonization worked out by a Princeton physicist, Gerard O'Neill. He sees space as a medium "rich in matter and energy" that could furnish almost all the raw materials—the moon alone has an abundance of aluminum and titanium—for a new civilization. His space colony concept proceeds from two premises: that we should create new worlds instead of colonizing old ones, and that we should build them with materials mined in space itself.

Space as a place to live

"The total resources even of the asteroids are enough to build roughly 3,000 times the land area of the Earth," says O'Neill, a slim, youthful-looking professor of 48.

O'Neill points out that the total land area of the space colonies could be three times that of Earth by the end of the next century; as early as the year 2050, he believes, the population of the Earth might stabilize and even decline as people emigrate to space. He observes that only the initial colonies would need to be made of moondust and that after that the colonists could chip away at the asteroids, rich in iron, nickel, and the carbon, nitrogen and hydrogen essential to maintain life.

O'Neill's space-colony concept is a classic case of serendipity in science. In 1969 he assigned the idea as a hypothetical problem to his introductory physics course. He was startled by the speed with which critical physical problems were apparently solved by his students, and he began to take the concept seriously.

For several discouraging years, O'Neill tried to publish articles on the L_5 project in both scholarly and commercial scientific journals—without success. When his first article finally appeared in the September 1974 issue of *Physics Today*, it created something of a sensation and won him $25,000 in research money from NASA. By last May the project had begun to blossom, and O'Neill was able to attract about a hundred scientists, lawyers, sociologists, government officials and architects to a three-day conference on the L_5 project.

From the outset O'Neill believed that space should be the servant of the Earth. A sometime student of the economist Robert Heilbroner, O'Neill regards space colonization as an aid in resolving the multiple problems that threaten the Earth: overpopulation, pollution, a shrinking supply of raw materials and heating of the biosphere. Back in 1969, O'Neill first pondered the problem of overpopulation and the possibility of relieving it through space migration. He rejected the finite territory of the moon in favor of infinite space. He searched for an architectural design that would provide enough of an Earthlike feeling to make space colonization attractive to large numbers of people. "I believe we have now reached the point where we can, if we so choose, build new habitats far more comfortable, productive and attractive than is most of Earth," he stated confidently in *Physics Today*.

The space colony prototype will be shaped like a cylinder, ring or sphere, and spun to create an artificial sense of gravity. (The first colony would rotate every 20 to 60 seconds; the later models might take 2 minutes.) To keep its end-cap pointed toward the sun and insure an uninterrupted flow of solar power to its parabolic mirrors, each colony could be tethered to a twin spinning alongside it in the opposite direction.

Cylinders would be divided into six longitudinal strips: three "valleys" covered with soil, houses, forests and streams, alternating with three "solars" or large glass windows strengthened by steel mesh invisible to the inhabitants. Through the blue-tinted windows overhead the colonists of each valley will view a stationary sun reflected by a giant aluminum mirror hinged to the outside. These panels will swing open and shut to simulate a 24-hour day-night cycle. Later on, the length of the days can be contracted or expanded at will and the colonies can experiment with new cycles of time. In the early colonies, the sun will remain fixed overhead during the day. But in the later models, it will appear to rise and set with Earthlike regularity, as dawn and dusk are introduced into the lexicon of space.

Rainmaking in space

The atmosphere of each space island will be a chemical creation, a reenactment of millions of years of evolution on Earth. First, rockets from Earth will shoot tanks of liquid hydrogen and ammonia to the space site (the latter will also serve as a good emergency stock of propellant) and bring more nitrogen and hydrogen to the moon. Then the L_5 construction crew will take the plentiful lunar oxides and react them with hydrogen at high temperatures; in this way, the new world's first plumes of water vapor will evolve. Slowly the space colony will develop its own meteorology. "The very first stations will probably have to have a lot of help in having any weather: artificially triggered rain, that sort of thing," Eric Hannah, a sandy-haired man of 27 who served as O'Neill's re-

Ron Chernow is a Philadelphia-based free-lance writer with a special interest in technology of the future.

search assistant and is a walking encyclopedia on the L_5 project, is speculating. "But Model 4 (the full-scale model) is going to have its own weather, its own peculiar nature." It will even have Earthlike clouds sailing near the center of the cylinder. When the clouds burst, they will send rain flying in 360 degrees radiating from the center.

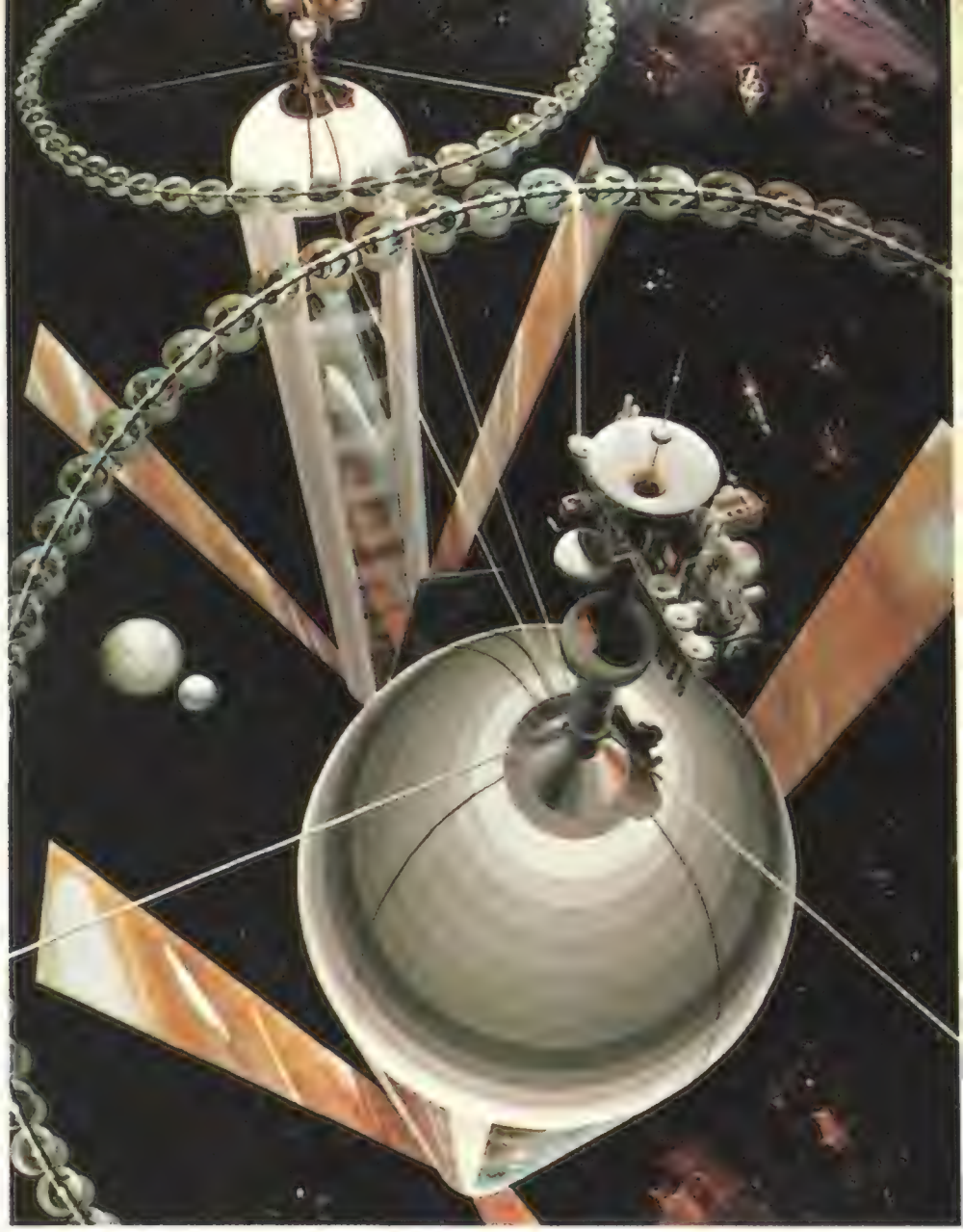
The space colonies will come in a standard progression of sizes. Model 1 would be a pair of cylinders one kilometer long and 100 meters in radius with a population of 10,000 people. From Model 1 to Model 4 each cylinder would be three times larger than its predecessor and be able to support ten times as many people. These space communities seem a little cramped until one compares them with population densities on Earth. The first space colony would have a population density comparable to that of a Manhattan block of old brownstones.

A more human world

For several years, O'Neill and his wife Tasha have dreamed of leaving Princeton for a year and spending it in a small village in southern Italy. That dream has been sublimated to his vision of L_5—of a small, intimate and altogether charming town without a trace of cosmic chill. Sometimes, in speaking with O'Neill, one senses that he hopes to make outer space a more human place than our sublunary world. In correspondence with an illustrator for the project, O'Neill betrayed his abhorrence of the monstrous scale of the modern megalopolis. "Please show the shops as highly varied," wrote O'Neill, who admits to a special interest in the architectural aspects of L_5. "The whole idea is *not* to be monumental; keep the scale small and human. The shops would be small: boutiques, bookshops, tiny restaurants, etc." Later on, he conjured up a picture of the recreational ambience in space: "The upper part of the end-cap is wild, just trees and rocks for climbing. There is a town on the lower slopes, rather like a small version of San Francisco or a larger version of Amalfi. . . . Cable-car tracks wind up the lower slopes of the hills. At the foot of the mountain, just in the valley floor, there is a lake with boats, marinas, beaches, etc."

For Model 1 (or Island One, as it is sometimes called, with its tantalizing suggestion of Swift's flying island), O'Neill fantasizes about re-creating a cross section of Polynesia, with a wealth of trees and flowers flourishing in a controlled, semitropical climate. Later models might implement a Swiss Alps motif, with moondust sprinkled over a framework of steel girders in a splendid mountain simulation. (The hollow of the mountain might be used as a storage space—or perhaps as a space-age theater.) The Princeton physicists feel that,

Princeton physicist Gerard K. O'Neill originally assigned space colonies as an exercise for a class.



A pair of advanced O'Neill colonies are tethered together, each crowned with a ring of farming pods.

at least in the beginning, the mimicry of the Earth will be well worth the trouble, if people are to adapt successfully to space. "If you look into one of these things," observes Hannah, "it would at least look like something out of Earth. It wouldn't look like something totally artificial and alien." He says that the first one would have a hothouse warmth and luxuriance of flowers by design. "If you had something like the Swiss Alps, you might say, 'Well, this is like space, it's high up and it's cold.' " Such schemes for various scenic landscapes are not impossible. With the raw materials of space, the advantages of assembly in low-gravity conditions, and an almost limitless supply of solar power, the space colonies could become models of architectural design.

Strange as it may sound, moondust, enriched with the necessary nutrients, will be used as the soil for all L_5 agriculture. In the early colonies, villages will be situated at the end-caps, with crops grown in the middle on a carpet of the enriched moon soil. But in the later designs, all agriculture will be encapsulated inside small cylinders or "pods" attached to spokes radiating outward from the end-caps. Farmers will ride an elevator each morning to the appropriate agricultural pod. In an environment of controlled light, heat, humidity and carbon dioxide, the growing season for many plants might be reduced from months to weeks. And growing seasons in the pods could be synchronized so that harvests followed one another at perfectly staggered intervals. L_5 might even witness the advent of new forms of agriculture. Jesco von Puttkamer, the study manager for space colonization at the National Aeronautics and Space Administration, has one idea for zero-gravity agriculture: "One might speculate that in a weightless environment plants may be grown floating in nutrient fogs, that is, by what we may call aeroponics."

In at least one fascinating respect, life at L_5 will differ from Earth. As one ascends a mountain, the artificial gravity will diminish; at the center of the cylinder, it will disappear altogether, yielding to space-like weightlessness. O'Neill and Hannah hope that these conditions will be used to create new sports and arts. At the one-tenth-gravity swimming pool, a diver will spring from the board and soar for blissful seconds before plunging into the water. "You would have very beautiful splashes," sighs Hannah, dreaming of the slow-motion upsurge of droplets. A little lower, at a two-tenths-gravity level, there might be a ballet school, with ballerinas gliding magically across the floor as if sliding upon a sheet of ice. A glider pilot by avocation, O'Neill has one special dream: a zero-gravity area for man-powered flight at the cylinder's center, much like Arthur Clarke's vision in *Rendezvous at Rama*. There, inside a special mesh of nets, he dreams of taking off from a moondust mountain and pedaling a flying machine through space, a tiny dream figure a quarter of a million miles away from his native Earth.

However pretty and ingenious the fantasies of space life, Gerry O'Neill knows that he will ultimately have

The inside of the colony becomes dark and colorless during a total eclipse of the sun by the Earth.

to sell the project in hard dollars-and-cents terms. "It is an essential feature of the colonization project that Earth should no longer have to support it after the first two or three stages," he states categorically. The "seed money" for such a project would probably come to some 150 billion dollars. But O'Neill believes that the space colonies would not only support themselves eventually, but prove a profitable venture. When he recently assembled 30 speakers for the 1975 L_5 conference at Princeton, the second conference on the project, the term space colony had undergone a significant metamorphosis: It was now called a "space manufacturing facility." The change in emphasis is real. "The first such community would already be a very powerful manufacturing facility," says O'Neill, "but certainly not a colony in the sense of something that would make a dent in the Earth's population."

If the Arab oil embargo and the attendant energy crisis seemed to imperil the industrial world, they may at the same time have made a space colony sound more feasible. Starting in late 1974, O'Neill began to think seriously about making a potential connection between the two.

He began to consider the possibility of the space colonies' building solar power stations that would circle the Earth and beam their power to the surface through microwaves. This aspect of the L_5 project has now become its greatest rationale and economic selling point. "We think that we can solve the energy crisis permanently, cheaply and with no byproducts," says Eric Hannah. "We can solve substantially the environmental problems, the pollution problems, the problem of using plutonium, waiting for fusion reactors and strip-mining coal. We can do that by building solar power stations."

Assembled in space

The space colonies would build solar power stations in convenient low-gravity conditions and move them to geosynchronous orbits 22,000 miles above the Earth so that the power station would always be above its receiving station on the Earth's surface. The idea of solar power satellites has been around for several years and the Princeton physicists know that they must prove the economic superiority of building them far out in space.

"The technology already exists," explains Peter Glaser of Arthur D. Little, Inc., who has worked on the solar station concept for many years. "The real question is what makes the most sense economically—whether it is cheaper to build them on the ground or build them at L_5."

Another class of space manufacturing cannot be surpassed on Earth, one that relies on low-gravity conditions. For example, it is very difficult to purify some pharmaceuticals on Earth. By use of electric fields they could be purified in space. Because some biologicals cost as much as a billion dollars a pound in a pure state, it could be profitable to produce them in space for consumption on Earth. The same would hold true for electronic crystals.

Another profitable and timely business for the colonists might be rounding up huge asteroids rich in high-grade iron and nickel. They might shape reentry vehicles out of the iron and have them smash into a pickup point on Earth. Says Hannah: "We might be able to provide enough steel for ten years' world production out of one asteroid. Literally your entire world market for ten years would be over your head."

In the last analysis, O'Neill feels that the present need to justify space colonies on the basis of costs versus benefits will seem as foolish a hundred years from now as the 19th-century debates over the economic viability of the transcontinental railroad. He sees it as the next logical and inexorable step in human evolution, a historical trend as implacable as the exploration and colonization of North America by Europeans. He likes to draw an analogy between his celestial vi-

sion of space colonies and the Renaissance quest for fresh frontiers. "The last age of exploration, which of course was simultaneous with the Renaissance, perhaps not by accident, was a period when people felt new options coming in at a great rate," says O'Neill. "Options" is O'Neill's favorite word and he has an existential relish for choices and individual freedom.

O'Neill believes that our roots as a frontier people will push us inevitably toward space. "I think you have to remember that although we are no longer a frontier society, we're the descendants of people who were willing to go into a new frontier and suffer considerable hardships and a lot of danger in order to find freedom and new opportunity," observes O'Neill.

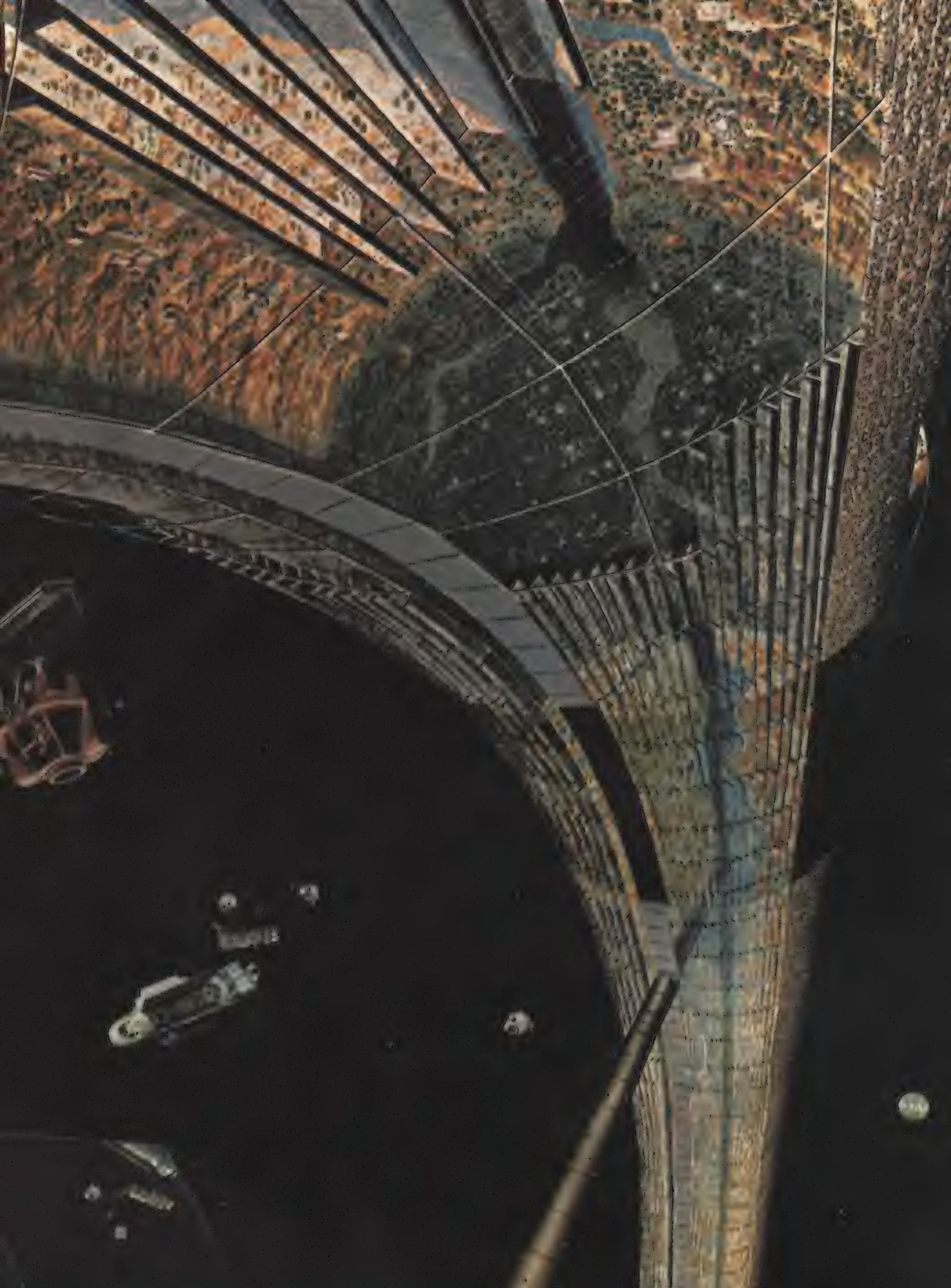
Sometimes O'Neill worries that this restless urge to seek and create will be stifled by the increased standardization of a static planet. He has given considerable thought to the modern-day communes, but objects to the social pressures and uniformity that they tend to impose on their members. Space, on the other hand, he sees as a place that will permit the sort of social and political experimentation that is becoming increasingly difficult in the Big Brother world of government bureaucracy and advanced telecommunications. His ideal world is a place that allows a maximum of choice for its inhabitants. When asked if he thought he was playing God, O'Neill, soft-spoken and thoughtful by nature, reacted with uncharacteristic vehemence.

"I'll tell you the people who are trying to play God," he rejoined, "and that's the people with the classical Utopias. Because what they were really saying was, 'We have our own ideas as to how people should live together. These are the only right ideas. And you must go and you must live our way.' And that's why I'm very, very careful not to ever say or specify anything about the details of how people will choose to live. That's up to them. I'm trying to provide a technological option which people can use in order to be able to develop their own ways of living."

The National Aeronautics and Space Administration is taking Gerry O'Neill seriously. Recently, NASA set up a study program on the L_5 project at its Ames Research Center in Mountain View, California, from which the paintings on these pages came. In their recent report "Outlook for Space," which sketches out possible space scenarios in the final two decades of the century, the participants listed the L_5 project as one of the options. Some at NASA, like Jesco von Puttkamer, would prefer to see two preliminary stages before permanent occupancy of space in near-Earth orbit and a permanent base on the moon. Some consider O'Neill's timetable unduly optimistic and wonder aloud whether the catapult on the moon—the linchpin of the entire project—is as surefire a method as O'Neill contends. Some also worry about the creation of a closed ecosystem with its complex interaction of chemicals and organisms. But their rigorous criticism of the project is itself testimony that it is being taken seriously in the aerospace world.

"It could be that America is already on a long downhill slide away from a peak which is already in our past," says O'Neill, who hedges his prophecies like a gambler. "There are other countries that are certainly not at that point from a psychological standpoint, countries which are still definitely on the up side of the rise. I think that without something like a space colonization concept to challenge us, we might very well have had it."

Some engineers are returning to earlier, circular designs in their thinking about space colonies. At right is an agricultural area inside such a ring; louvers admit sunlight but absorb cosmic radiation.



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By Charles J. Oppenheim III

Perfume is social dynamite in an expensive package

For centuries the sweet smell of success for Cleopatras and modern Cinderellas has come from odd and unlikely ingredients

What did Cleopatra have in common with the young lady from the steno pool who ends up marrying the boss? Both are examples of what perfume can do for the working girl. We think of perfume solely as a sexual incentive (which indeed it is), but throughout the ages people have relied upon fragrant substances to enhance their bodies, intercede with their gods, freshen their homes and kill germs.

These substances are lumped under the general term perfumery—but that is a complex subject, suffering from a lack of vocabulary. We have such words as "strong," "weak," "pleasant," "disgusting," but these apply to whole groups of odors, when actually each member within that group has its distinctive scent. So the best we can say is that "It smells like lilac" or "It smells like skunk." But what do lilac and skunk smell like? Lilac smells floral, but so do many other things. The skunk smells like an unpleasant animal (when he's being unpleasant), but so does the hyena.

A perfumer uses such words as "bouquet," the overall impression of a perfume; in a compound of different odors he may refer to "top notes," which flit on the surface and are sensed immediately, and "middle" or "basic notes," which emerge gradually and are not among the first reactions to an odor. He talks of the

Good smells can only be described in terms of specific objects that strike the nose pleasantly.

natural oil of flowers as "essential oils," "concretes" or "absolutes." He refers to "fixatives," which are animal products, and "synthetics," which are chemicals.

Essential oils have exotic names and evoke faraway places. Ylang-Ylang comes from the Comoro Islands and Madagascar; vetiver (khus-khus) grows in Haiti; bergamot is from Calabria; orris from Italy; patchouli from the Orient; verbena, from Algeria; spikenard from Nepal and Bhutan. Southern France and Italy produce tuberose, cassia, jasmine, rosemary, thyme, violets, carnations, geraniums and many other fragrant plants and herbs. The finest hyacinths, odorous bulbs and peppermint come from the colder climes of England and the Netherlands.

The oils are found throughout plant structures: in petals, roots, flowers, leaves, stems, fruit, bark and seeds. Chemically, most of these oils represent a complicated formula. They vary widely from powerful to weak, hot to cool, sour to sweet.

Chemists have discovered that odorous substances are comprised of two molecules of isoprene joined together in countless ways. This class, known as the terpenes, produces many of the hundreds of essential oil components. How the plant manages to convert these basic chemicals, and where it gets them in the first place is, of course, a much greater miracle than any wrought in the laboratory.

Today, as a rule, a perfume is a union of oils, gums, spices, herbs, fixatives and synthetics. The real art and skill of the perfumer lie in blending these materials and producing a pleasing fragrance.

There are five methods of producing natural oils:

• *Distillation.* Plant cells are broken down and oils released. Vaporization and condensation take place simultaneously. The oil floats to the top; the water sinks. This is a simple, inexpensive method, excellent for woods and leaves, too rough for delicate flowers.

• *Enfleurage.* Fresh flowers are brought to factories and within a few hours the petals are picked and placed by hand on glass covered with oil-absorbing fat. After one day, the petals are removed and replaced by new ones. This is repeated until the fat is saturated with pure oil. The fat is then dissolved by alcohol, the alcohol is drained off, and the natural oil is the residue. This time-consuming, centuries-old process is still practiced—but mainly for the benefit of tourists.

• *Maceration.* Flowers, or flower parts, are immersed in fats softened or liquefied by heat. The natural oils are thus "digested." This system is fast (and speed is important because some flowers wither quickly

Stenches are equally indescribable except by reference to the unpleasant things that cause them.

Illustrations by James Flora

In the Middle Ages, the era of rotten smells, fragrance was almost a matter of life or death.

and decaying odors taint the final product). Both maceration and enfleurage yield high-quality oils but in very small quantities—and at great cost.

• *Extraction.* A solvent—ether, benzene, alcohol—is used to extract the oils from the plant material. When the solvent is removed, a concentrated oil is left. This is further treated by purification. According to many experts, this method produces the truest possible essence of the natural flower oil.

• *Expression.* Pressure squeezes the oils out. This is the most effective way of handling fruit oils and similar substances. After the oil is obtained, undesirable ingredients are removed by boiling.

Gums and resins are found in trees and plants. Some are exuded automatically; most can be acquired by incision; others have to be extracted by boiling water or, in a few cases, by solvents. Those frequently used are: storax, which smells like naphthalene, from Greece and Asia Minor; sandalwood, a key constituent of many perfumes, from India and islands of the Eastern Archipelago; benzoin, also called gum benjamin (one of the first incense materials), from Indonesia and Thailand; labdanum, a product of Crete, Cyprus, southern France and Spain; olibanum, probably the frankincense of the Bible, extruded from various Asian and African trees; and balsam, found worldwide. These products are too "sticky" for use by the perfumer. A solvent, usually alcohol, is added and the infusion is then aged in cool, dark storage rooms. The dilution, added to perfume in tiny amounts, supplies body, weight and its own individual odor.

Knowing what we do about Cleopatra, it is safe to say she smelled terrific, with lingering scent.

Civet cats, musk deer, muskrats, beavers and sperm whales secrete substances which the perfumer uses as "fixatives." They make perfume more blendable, more distinctive, better able to retain strength, less liable to evaporation. Civet comes from several animals of the civet genus, especially the African civet cat, which excrete it as a protective measure. To obtain it, a captured animal is confined in a cage so small that little movement is possible. When the cat's posterior is irritated, or its scent pouch (near the anal opening) is squeezed, a yellow-brown liquid is released. Since humane societies are uniformly opposed to this cruel procedure, most perfumers in this country use synthet-

Charles Oppenheim learned about the subtleties of scent as an importer of French perfume. Retired, he does volunteer public relations work in a hospital.

ic civet instead of the real thing. Even so, some $375,000 worth of diluted civet was imported from Ethiopia and other countries last year, although no animals were brought here for the purpose. Natural civet has a disagreeable odor, but when processed and well diluted, civet is surprisingly pleasant to smell.

Musk, an extremely powerful odorant, is found in a small gland near the navel of the male musk deer, a goat-sized animal native to the high altitudes of the Himalayas—Northern India, Tibet and China. Castor (or castoreum) and domestic musk oil, supplied by the beaver and muskrat respectively, have lasting odors and excellent blending properties. This is just another problem for both of these unfortunate rodents, which have trouble enough trying to save their skins!

Ambergris has been the subject of legends, strange tales and misinformation for hundreds of years. Sperm whales eat squids, and squids have horny beaks which are thoroughly indigestible. The whale's intestinal tract becomes irritated, ambergris is formed as a reaction and later expelled. Perhaps only one whale in a thousand suffers this "I can't believe I ate the whole thing" stomachache, and given the sharp decrease in the number of whales, it is obvious that ambergris is worth hundreds of dollars a pound.

Ambergris floats and is found either on the surface of the sea or cast up on the shore in lumps—sometimes weighing 100 pounds or more. The best-quality ambergris is waxlike and ash-colored, with almost no scent of its own (perhaps the slightest fishy odor). It is soluble in alcohol. As a fixative, it is still used in some of the fine, old and expensive perfumes. It is long-lasting, mellowing and does not greatly alter other fragrant materials to which it is added.

Pre-Columbian American Indians used various aromas—especially incense—for religious purposes.

Trade with the Orient brought fresh aromas to Elizabethan England—which needed them.

The use of fragrant substances—gums, resins, woods, leaves and flowers—began in earliest times. Man learned how to combine them to make incense, and with it to worship his gods, embalm his dead and enrich the ceremonies of his kings and queens. Incense burned on the altars and in the homes of every country of the ancient world. It was used in the temples of the Land of Canaan, Egypt, Persia, Assyria, Babylonia, India, China and the kingdoms of the Aztecs, Mayans and Incas. And so perfume began with religious symbolism. The word is from the Latin: *per*—through; *fumum*—smoke.

When the tomb of Tutankhamen was opened in November 1922 (after more than 3,000 years), scientists found among the treasures ancient and beautiful receptacles for perfumes and ointments, still emitting a faint scent. Perfume bottles of glass and alabaster, ointment boxes of porcelain and chalcedony and containers of diorite for precious unguents have been found at the ruins of ancient palaces and towns, and are still being unearthed today.

Perhaps the first known recipe for perfume is in the Book of Exodus: "And the Lord said unto Moses, Take unto thee sweet spices, stacte, and onycha, and galbanum; these sweet spices with pure frankincense:

of each shall there be a like weight: And thou shalt make it a perfume, a confection after the art of the apothecary, tempered together pure and holy. . . ." Balm of Gilead is mentioned in Genesis. Solomon tells of spikenard, saffron, calamus and camphire.

Myrrh (and stacte was most likely a variety of myrrh) is the first aromatic gum on record. It was carried by the traders to whom Joseph was sold by his brethren. It was offered by the Magi—along with gold and frankincense—to the infant Christ. Frankincense (or olibanum as it also was called) was a trade commodity among the Phoenicians, Egyptians and Arabians. Babylonia, astride the routes from India, Arabia and Syria, controlled the sale of other gums and oils.

Fragrant oils and unguents

Greeks used oils and wines as solvents for producing floral extracts. When they made dry perfumes, they simply reduced the roots and other plant materials to powder and mixed them together. Roman patricians used fragrant oils and unguents which their slaves brought them at the baths. Solid unguents with a base of fat were the common type of perfume, but there were also liquid fragrances using oils as the blending medium. Those we know of include nardinum, a blend of ingredients such as sweet rush, labdanum, spikenard and myrrh; megaleion, which contained cassia, cinnamon, myrrh and burnt resin; susinon, made of lilies, calamus, honey, cinnamon, saffron, myrrh.

Getting back to Cleopatra, we might dwell on what she smelled like. Knowing the raw materials available, and a good bit about her personality and reputation, we can assume she was ambrosial. Emanating from her would have been a cloud of incense—spice, musk, herbs, woods oil—most pleasant, very strong, marvelously lingering. When the wind was right, it should have been easy to pick up her scent, and that of her equally redolent handmaidens, as the royal barge progressed up the Nile. Other queens, other odors: Elizabeth I preferred plain rose; Marie Antoinette's favorite was violet.

The downfall of the Roman Empire meant the downfall of plumbing and hot baths. Cities, villages and, alas, people began to offend again.

During the medieval period, often only the better houses had pits or privies. Street cleaning and the removal of waste were usually left to individual homeowners, which meant they were usually left. Morris Bishop in his book, *The Middle Ages,* wrote: "Butchers slaughtered animals at their shop fronts and let the blood run into the gutters. Poulterers flung chicken heads and feathers into the streets. Dyers released noisome waters from their vats. . . . Pigs ran free as scavengers. . . . Flies settled down in clouds to their banquets. The walker, perhaps with a perfumed handkerchief to his nose, picked his way carefully, dodging the black mud thrown up by the squash of horses' hooves. And there was always a menace from overhead. . . . Louis IX of France received the contents of a dumped chamberpot."

It was generally believed, with some reason, that the putrid air gave birth to diseases of all sorts. Fragrant materials were used as an antidote both on the person and in the home. A perfume which included incense, herbs, spices, woods and animal secretions was burned on coals indoors to prevent plague. During epidemics in London, these substances were used in fires which were lighted on the streets.

According to one account, two Italian brothers, the Farinas, settled in Cologne in the early 1700s and began to make a product using lavender, citrus oils, neroli, bergamot, cloves, mace, sage, thyme, rose petals, violets, jasmine—and more! Result: eau de Cologne, a new sensation. It owed its refreshing qualities to the presence of sufficient alcohol to induce rapid evaporation, which in turn was cooling. Napoleon ordered it in large quantities.

France has been associated with perfume since the 12th century. When Louis XV was king, perfume

Of all our senses, smell, especially, transports us in imagination to scenes once visited.

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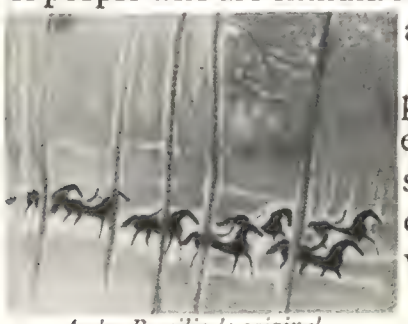

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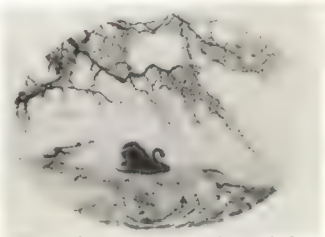

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gushed. Versailles was called *la cour parfumée*. It became a challenge to wear a different fragrance each day. Diane de Poitiers, Madame de Pompadour, Madame du Barry—all were leading patronesses of perfumes and wildly extravagant in their use.

In England, perfume arrived in full force with the Tudors. Booming trade with the East brought aromatic gums, ambergris, civet and musk to English ladies, who had been distilling perfumed water from their own native flowers and herbs for many years. Stately homes had still-rooms where aromatic waters (along with household remedies and confections) were made from old recipes. Simple, light fragrances using roses, violets or lavender were used on clothing and linens. Many rooms had silver perfuming pans.

Generally, 16th-century perfumes were in dry powder form, or flower petals mixed with gum and roots. These mixtures were carried in pomanders or pouncet-boxes. Pomanders were silver spheres opening horizontally or segmentally, usually filigreed, often jeweled. The pouncet-box was shallow, either circular or square, with a domed and perforated lid. It could be pocketed, worn at the waist or around the neck.

Elizabeth I, whose nose was reported to be sharp and sensitive, was especially fond of perfumed gloves imported from Italy and Spain, and had an entire cloak of perfumed Spanish leather. During her reign, writing paper was scented, and sachets were used throughout houses. Articles of a lady's toilet were in boxes called "sweet coffers," and her perfumes were kept in "casting bottles."

Perfumes were enjoyed in the New World, too. The English in America made little scented rolls of powders, gums and oils "as large as pease" and burned them to scent their rooms. They made cakes of rose leaves and civet, ambergris or musk to put in their closets and chests. They used perfume on themselves as well. Every little bit helped!

But it was inevitable that France would become the center of the perfume world. Provence and the Riviera have the perfect climate for the cultivation of flowers. By the latter part of the 18th century, the perfume industry began to thrive in that fertile region, and by the middle of the 19th, Paris was *the* fashion capital. Thus, in our century, her couturiers are famous as *parfumeurs* as well: Chanel, Lanvin, Patou, Worth, Balenciaga, Balmain, Dior, Givenchy, Yves Saint Laurent, Nina Ricci, Schiaparelli and so on.

Today, all modern perfumes use synthetics. Coal tar was the original source of most of these, producing the benzenes. It has now been replaced by amyl, benzyl, ethyl and methyl compounds. Today's most popular

group are the aldehydes (thanks to Coco Chanel, who first appreciated their potential). They are so numerous that they are both lettered and numbered: aldehyde B, aldehyde 22, and so on. Aldehyde C by itself, as an example, smells rather like a used candle. It becomes "workable" and pleasant when combined with other synthetics or oils.

Smell is perhaps the least understood, the least researched, of all our senses. Perhaps it is the least appreciated as well—until it is lost. Catch a cold: Much of the pleasure of life has vanished. Smells can transport us, instantly, to a forgotten moment of the past; they sweep us up, catch us, shake us, take us by surprise. We shut our eyes and remember a scene, a loved one, a meaningful event: *Christmas*—spruce tree, turkey, mincemeat pie; *campfire*—wood burning and cold night air; *libraries*—mustiness, dustiness, warmth; *seashore*—salt, seaweed, bayberry, flats at low tide. And, most certainly, *perfume* has special power to provoke emotional response and reawakening, to bring back intimate moments and bittersweet reveries.

Essential oils from herbs and flowers are mixed with fixatives from animal sources to produce perfume.

A Prospect of the City of London from St Marie overs Steeple in Southwark in its flourishing Condition before the Fire
The River Thames

Darkness at Noon

BY JOHN LETTS

'A most horrible, malicious, bloody flame, not like the fine flame of an ordinary fire' observed Samuel Pepys in his diary. In four days and four nights the Great Fire consumed by far the greater part of what was then considered the centre of the civilised world. In later centuries, it is a story too much taken for granted: the enormous scale of the devastation is forgotten. Over *thirteen thousand* houses consumed: *eighty-seven* churches: *forty-four* of the rich livery companies' halls (only seven survived): some *eighty per cent* of the city within the Roman walls devastated as thoroughly as Hiroshima, if not quite so instantaneously. The horrible, malicious flame was visible 'above forty miles roundabout for many nights': the smoke 'so great that it darkened the sun at noonday'.

Yet the City rose again. The story of that resurrection is quite as compelling as the story of the holocaust itself, and its achievement remembered all over the world. (After the terrible Tokyo earthquake of 1923, the Japanese sent to know how London had dealt with her calamity two hundred and fifty-seven years before.) The inscription on The Monument claimed, quite untruthfully, 'Three short years complete that which was considered the work of an age': in truth, the last plot for rebuilding was not staked until 1696, thirty and not three years later.

Eric de Maré's skilful and vivid narrative in *Wren's London* traces the ways in which the hand of a true genius, Dr Christopher Wren, shaped the rebuilding. His plan for a new, splendid city was presented to the King, incredibly, only six days after the fire had died down. Most of it was rejected. Too many conflicting interests were at stake for any single plan to rebuild 'with pomp and regularity' a city which could have become, said Wren's son, 'the Wonder of the World'.

Yet, if London missed its finest opportunity for improvement (a debatable point), Wren's genius certainly added an astonishing grace to a City which had never previously been renowned for beauty. For three decades, he dominated the rebuilding. He helped frame the two rebuilding acts, rebuilt the Guildhall, carried through a major improvement of London's waterside, gave London two or three outstanding secular buildings such as The Custom House and Temple Bar, and to crown all, perhaps the finest series of cathedrals and churches to have come from a single hand anywhere in the world, including London's most famous visual symbol, the great cathedral of St Paul's.

Many feel it was a tragedy that his favourite design—The Great Design—was rejected: yet its successor, the cathedral we have today, was a masterpiece, too, by any standards. His reward for half a century of patient and devoted labour was dismissal from his post of Surveyor-General for mismanagement, at an age when he might have been allowed some

One of Elisabeth Frink's suite of three-colour lithographs for the Folio edition of The Odyssey.

Beautiful Books

reward 'having worn out by God's mercy a long life in the royal service', as he said with his usual dignity. His monument, as his tomb in St Paul's correctly says, lives forever around this last resting place of one of the greatest and most generous of Englishmen.

It is a strangely awe-inspiring and uplifting story.

Five Untruths about The Folio Society

Several thousand book lovers in the United States belong to an unusual international book organisation which conforms to almost none of the rules. It doesn't mass-produce, doesn't buy ephemera from other publishers, allow you credit, or use a computer. It answers letters by hand (in verse if you write in verse) and makes no charge at all for packing or despatch, whether you live in Florida, Fiji, or Prudhoe Bay.

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Virginia dredgers plough the southern Bay,
seeking their 25-barrel limits of winter crabs.

By William W. Warner

Winter 'drudging' lifts crabs from Chesapeake mud

In the year of the crab, the first northwest gale touches a chord of instinct in 'Jimmies' and 'sooks' and the watermen who hunt them

It can come anytime from the last week in October to the first in December. There will be a fickle day, unseasonably warm, during which two or three minor rain squalls blow across Chesapeake Bay. The sun appears fitfully in between; sometimes there is distant thunder. A front is passing. The first warning that it is more than an ordinary autumnal leaf-chaser comes near the end. The ragged trailing edge of a normal front is nowhere to be seen. Ominously absent is the steady procession of fleecy white puff-ball clouds that usually presages two or three days of fine weather. Rather, the front picks up speed and passes so rapidly that it is stormy at one moment and unbelievably clear and cloud-free the next. Then it comes. The wind rises in a few minutes from a placid five or ten knots to a sustained 30 or 40, veering quickly first to the west and then to the northwest. The dry gale has begun. Short and steep seas, so characteristic of the Chesapeake, rise up from nowhere to trip small boats. Inattentive yachtsmen will lose sails and have the fright of their lives. Workboat captains not already home will make for any port.

When at last the gale stops, the water is gin-clear and a new cold creeps over its surface. Canada geese that rafted lazily far from shore on Indian summer days move closer to land and the hunters' guns. Autumn, a charmingly indecisive time on the Chesapeake, has given way to winter. The blue crab, always rather sensitive to such things, may react overnight. Where one day big Jimmies (males) still cruised the shallows, the next will see them gone. "Strong nor'-wester blows 'em right off the bars," says Grant Corbin. "They know where to go."

The big males receive too many signals to ignore. Cool winds have been blowing on and off for some weeks, but now the photoperiod or relative length of night to day is adding its message. Water temperature drops to the 50s, slowing metabolism and giving fair warning of the time when many cold-blooded invertebrates, the blue crab included, can no longer be active. Added to these factors, the big northwest blow tips the scales of crab judgment. The large males suddenly slide off the banks or semishoal waters and descend into progressively deeper water as temperatures fall. Ultimately they will end up in the deepest holes of the main ship channel. The water in these deeps will remain much warmer than the surface, enough at least to permit the wise crabs that go there another month of limited feeding and foraging.

Females also respond to the decisive blow, although not so precisely. Many of the sooks, as they are called, will already be close to their destination at the Bay's lowest reaches. But equal numbers may still be moving along their migration route. The blow that rings down the curtain on autumn's delights will send them scurrying south in double time.

Some few watermen will continue crabbing until well on into what can only be called pure winter. In Virginia there is no closed season on crab potting. Maryland has seasonal regulations, but they are generous in the extreme. If dead of winter is long in coming—just before Christmas, for example—the continuing crabber will have his patience rewarded. Often he will look to the crabs themselves for a forecast. If the big Jimmies, for example, take their time about their last or end-of-the-summer molt, the delay is considered a good sign for a mild autumn and a correspondingly late winter. An abnormally large number of recently shed Jimmies, or "white bellies," in the last half of September will make up the crabber's mind. "Nature tells them something we don't know," one crabber assured me.

Given such signs, a handful of crabbers determine to haul pots for as long as they can. Many must get up very early and run for a dark hour or more to the deep holes. Often as not, strong beam winds will make it a wet ride with heavy rolling. To harvest these deeps successfully, more than 100 feet of line must be added to the summertime lengths of the pot warps. Hauling the pots takes correspondingly longer. The pot pullers are worked until they seem to scream in protest. Often a whole line of pots will be missing. Not poachers, but wind and tide are responsible. The punchy northwest

A Smithsonian consultant, the author spent two years on his forthcoming book, Beautiful Swimmers.
This article is adapted from a chapter. Mr. de Gast is widely known for his photographs of the Bay.

Courtesy of Atlantic-Little, Brown. Copyright © 1976 by William W. Warner

Photographs by Robert de Gast

Crabs spill on *East Hampton's* deck as "drudge" is emptied after an early morning "lick."

winds and equinoctial tides combine to generate strong bottom currents; the currents tumble and roll the crab pots, fouling the lines and pulling the marker floats down out of sight. Searching for such lost pots with grapnels, which might well be attempted in shallower water and calmer seasons, is too difficult and time-consuming at 90 or 100 feet. The crabber shakes his head and searches for the next line.

A few crab potters, nevertheless, will still be at their business in December, getting as much as $15 the barrel. Then one day a moisture-laden low coming up from the South will collide with cold air over the Bay. Snow falls and hisses on the water. It is all over.

"Snow gets in that water and crabs stop moving," says Sammy Horner of the Island Seafood Company on Deal Island. "It's like somebody turned a switch off."

Scientists tend to disagree, or at least acknowledge that they have not yet really studied the effects of snowfall on crab behavior. Rather, they claim water temperatures below 40 degrees are the critical factor. But they are careful not to dismiss the crabbers' observations too lightly.

In truth, the blue crab probably responds to not one but a variety of signals in deciding when to bed down for the winter. Where one is not present, others will give the message. The temperature signal which induces metabolic change is obviously important. The blue crab's excellent vision might well record the winter thinning of eelgrass or the disappearance of familiar summer food. Hormonal factors must be present. It is even possible that tactile senses come into play, or the strong rush of autumn currents against hundreds of highly sensitive cilia. We sometimes claim to smell snow in the air; crabs may do it in the water.

Whatever comes first—snow, cold water or other signals—the reactions are quick. The crabs decide to bury rather suddenly. They do so backwards, forcing their abdomens into the bottom with quick, snapping motions. Simultaneously they pick and claw at the mud or sand with their hind walking legs and flip it neatly away with the paddles of their swimming legs. The burying requires no great effort compared to molting and other things blue crabs have to do. Within the space of a few minutes, the crabs are resting at a 45-degree angle in the bottom, with only antennae, the tips of their eye stalks and little channels in the soft mud leading to the gill chambers left to betray their presence. They are not in deep hibernation. The preferred term is dormancy—tucked in for a winter's rest.

Every crab in the Chesapeake Bay settles down for the winter in this way: male and female, young and old. Unhappily, not all are left in peace. Enter Virginia, always more permissive than Maryland, and what is known as the "special season" for dredging winter crabs. It is the only form of seasonal limitation in the Old Dominion and runs from the first of December through the end of March. During this period properly equipped boats may tow heavy chain and twine bags, almost twice the weight of oyster dredges,

and literally dig out the crabs from the bottom. The principal victims are the sooks that bed down in great numbers near the mouth of the Bay.

Winter crab dredging is a select operation, involving a fleet of no more than 70 vessels. They are the largest of any regularly used in the Bay fisheries and represent a truly generic Chesapeake form. The first crab dredgers were simply converted schooners, shorn of masts and fitted out with powerful engines. But as the aging schooner supply dwindled, powered boats were specifically built for oyster marketing or crab dredging. Unknown designers made a nice compromise. It was of course necessary to clip the schooner's foreparts and substitute a bluff bow to make dockside handling easier. But the graceful schooner stern was largely retained, either fully rounded or transommed and "tumblehomed." Some of today's dredgers show their schooner ancestry in neat taffrails with stanchions elegantly turned like Victorian stairway newels.

The crab dredgers make their home ports in rather incongruous places. One is Cape Charles near the southern tip of Virginia's Eastern Shore, a ghost city that once served as the principal terminus of the Cape Charles-Little Creek ferries, long a vital link in the New York to Florida coastal route. No one from Cape Charles goes crab dredging. Rather, the expert crabbers of Tangier Island move south and use the abandoned ferry slips for the winter. They go out six days a week, weather permitting, and journey back to Tangier on Saturday afternoon, weather notwithstanding, since it wouldn't do to miss Sunday gospel service. "Don't call it home port," the Tangiermen say of Cape Charles. "It's just a place to tie up for us." Another base for the dredgers is Hampton, which harbors over half the small fleet and shares honors with Crisfield as an important pioneer and present-day center of the crabbing industry.

Essential to the winter "special season" are soundly forged dredges, properly adjusted for "bite" or angle of attack and dragged over the right places on the bottom. The tined bar forces up bottom mud or sand in a neat curl like snow in front of a road plow. In the curl are the rudely awakened crabs. A dredge stays down 10, 15 or 20 minutes, according to the captain's sense of where he is and how the dredges feel. The boats labor along at two or three knots under the strain. You can see them most any day in season working all together on York Spit, the Horseshoe, Willoughby Bank or even out by Capes Henry and Charles. Their jaunty bows take the head-on seas well, but a trifle heavily. Downwind the seas at first slide smoothly under their rounded sterns. But the dredges hold them prisoner and the boats yaw and roll as their weight is felt. After being aboard for some time, you get the feeling dredge boats deserve better. They should be freed of their shackles to leap ahead, cleanly and seakindly, as they were built to do.

Rising dredge stirs crew to action

While both dredges are down and the decks cleared, the two crew members can get some rest. To arouse them, the captain pulls his heist cord, and an infernal clanking begins as the tow chain comes aboard. When the dredge first breaks water alongside, a man stationed aft picks up a slender log of loblolly pine called the "turning stick," inserts it between the struts of the dredge's triangular forepart and worries it back and forth until the dredge's open face falls against the side of the boat. A fastidious captain may then drop the dredge a few times at water level to free it of mud or weed. One final pull on the heist cord and it bounces up over the roller, guided by the crew, and falls heavily to the deck. The men then open the bag and crabs spill out on the deck. If it is a poor "lick," there will be no more than a discouraging two dozen—hardly commensurate with the effort. But two dozen on the next

lick makes a basket. Three good baskets of crabs means a barrel. Twenty-five barrels at average winter prices means two to three hundred dollars. The dredge boat captains stick at it.

The crabs are a pleasure to see. Summer's friends revisited, alive and well. Ninety-five percent are sooks, patiently guarding the male sperm packets that will not be used until late May or June, for these are the recently mated females that have journeyed south from all over the Bay to find salty water. Here near its mouth they have it, or 25 to 30 parts salt per thousand of water. Anything less would not permit the sooks to spawn the following spring. The males have not come with them. Surely this is for the best. With male and female together the lower Bay would be a brawling crab metropolis, dangerously overcrowded, and too easy a mark for the winter dredgers.

Just how alive the crabs will be depends to an extraordinary degree on temperature and weather. Dormancy sounds rather total, like pregnancy. It is not. The crabs toss and turn nervously in their beds on the bottom. Although they seldom get out of bed completely and pace the floor, so to speak, they do expend considerable energy changing position, digging in and digging out, trying to outsmart winter's caprices.

I first became aware of the blue crab's winter behavior aboard Captain Benjamin Williams jr.'s *East Hampton* on a particularly cold and rough day during the first week of the special season. Bucking out into Hampton Roads with the first light, the captains exchanged interminable opinions on the weather over crackling marine radios. Two boats turned back with seasick crews. Good-natured derision greeted this event. "Hey thar, Captain Woody, tie 'em to the mast and feed 'em raw eggs," one voice advised. "Lemon juice," said another.

By eight o'clock *East Hampton* and some 17 other boats were strung out over a broad area south of Thimble Shoal Channel, or the heavily buoyed waterway which all vessels making or departing Norfolk, Portsmouth, Hampton Roads and Newport News must use. At precisely 8:20, Captain Williams found a buoy he liked, linked it up with a short point and ordered the dredges overboard. *East Hampton* immediately lifted more heavily to the seas. Occasionally she came down hard. A curtain of spray would hang momentarily high in the air, or just long enough for the crews to catch their breath. The wind then slapped it down hard all the way back to the pilothouse.

The first dredge brought up about three dozen crabs. From the pilothouse they looked rather inert. They tumbled out of the dredge and remained as they fell: on their feet, upside down or jammed sideways between neighbors. Some waved their claws feebly in defense. They did not bite the crew members, however, who went about on hands and knees to pick them up. I asked Captain Ben if this was the way of all winter crabs.

"Too cold today and they don't like it," he said. "Yesterday they was very wiggly."

By half past nine almost three barrels of sooks were already aboard. I began to feel correspondingly guilty about staying in the warmth of the pilothouse. The two crew members, whom Captain Ben referred to only as "Old Willie from Guinea" and "Young Ray," were having a wet and cold time of it. I told Captain Ben I could readily distinguish the few Jimmies from the sooks and offered to help cull. He thought this would be a nice thing to do; the boys would certainly appreciate a spell by the galley stove. As I opened the pilothouse door, Captain Ben cautioned me to crawl under the tow chain going forward and to get down on my

The quarry—a blue crab sook, the sexually mature female, is marked by a triangular abdomen.

Crewman uses a pine "turning stick" to hold the dredge in proper position for emptying.

Captain Ben Williams watches from pilothouse as a red-capped deckhand culls the catch.

hands and knees when culling. "You do just like Old Willie, thar," he shouted. "Ain't no day for a swim."

As the day progressed, young Ray, an acne-faced man in his twenties, began to take me into his confidence and complained that the dredges were being hauled in too frequently. Captain Ben seemed to sense what was going on. "Big Jimmie, thar, Ray," he yelled. "Right by the post. Couple more under the roller. Clean it up good, hear?" The window snapped shut, just in time to ward off another curtain of spray.

The culling, which gave a good opportunity to examine the crabs closely, was at first not unpleasant. This hands-and-knees observation ceased, of course, when the dredges clanked in. Getting the emptied dredges back overboard was especially difficult. The *East Hampton* rolled sickeningly to broadside seas, since it is necessary to speed up and make a 180 degree turn at this point in the operations. "You got to get away from them drudges as soon as you drop 'em," Captain Ben had said. I had managed to station myself at the forward end of the roller where there was no rail or other containment. By the time Ray came back from a galley warm-up, it occurred to me to try some safety measures. I would hold on to one of the mast's chain shrouds with one hand and lift the dredge with the other. The experiment failed. I could not lift my end as quickly as young Ray. The dredge jammed diagonally on the roller. Precious seconds were being lost. Down came the pilothouse window. "Get a good holt of it," Captain Ben shouted. "No way in the world you going to get that over with one hand. Ain't no way to do, hear?"

"See how he give it to you," Ray said. "And you just along for the ride."

Back in the pilothouse, Captain Ben was affable as usual and told me much about the weather, seasons and buried crabs. We were working part sand and part mud bottom at depths of about 20 feet, he explained, and he thought the day might warm up later since the sandy bottom crabs were not buried too deeply. Scientists cannot prove it and scuba divers cannot see it, but it is evident from the observations of Ben and other dredgers that dormant crabs are quite capable of burying themselves six inches or more below the bottom surface with no ill effects. Crabbers all over the Bay agree. "Crabs are smarter than you think," says one. "Gets cold and they roll on more blanket."

By 1 P.M., as we worked slightly deeper water close to the Thimble Shoal Channel, one lick produced almost a full barrel. Eleven barrels were already filled. I went out to relieve young Ray. Fortunately the wind was moderating and the day was getting warmer, just as Captain Ben had predicted. Bow spray no longer drenched the deck, the rolling was less acute, and I worried less about falling overboard. Most surprising of all, the crabs were already responding to the warming trend. Some actually nipped and a few even sought escape, scuttling in slow motion across the deck.

Between licks I chatted with Captain Ben, who now kept one of the pilothouse windows permanently open. He told me that although we were doing better, he had gotten his limit by this time the day before. Rough weather always made things slower. "Your drudge is like yerking on the bottom," he said.

Four hours and some 20 licks later, Old Willie and Ray had almost filled the prescribed 25 barrels. It was now time to round them off by adding as many crabs as possible and packing them down hard. After considerable effort Old Willie and Ray turned to the pilothouse. They stared at Captain Ben silently. The barrels were not tight enough; he ordered another lick. "They know it," he said to me. "If they don't do it right, they have to stay out that much longer."

At ten minutes after three, Captain Ben shouted "drudges up." First the port and then the starboard dredge clanked in for the last time. The crew made their way aft. "Now, wash them lunch dishes," Captain Ben said to Ray. "Clean it up good back there and put the potatoes on."

Going back to Hampton the fleet captains hailed each other cheerily. They were glad they hadn't turned back with those two boats in the early morning. It had been a fair day after all. Captain Ben pulled a stool up to the wheel—he had been on his feet all day—and talked about the state of the industry.

"Couple of years ago there was a 20-barrel limit. Price was down to $5 the barrel. We all starved." Ben giggled, but it was clear he spoke of serious matters.

Today the price was eight cents a pound or approximately $8 the barrel. Ben said this was enough to make a living. Such admissions are not common among watermen, who habitually downgrade their earnings. But Ben figures costs and profits carefully and he is forthright in discussing them. Boat upkeep, fuel and equipment replacement, especially of dredges lost to bottom obstructions, were major costs. Then there is the crew of two. Captain Ben pays each $100 a week, plus social security, bunk and board, and rides back home on weekends. When working hard bottoms, which means longer hours, he adds $10 to $15 to their weekly salary. I asked about sharing the catch, as the Maryland skipjack captains do.

"Shares don't work. Sometimes, when things are bad, they wouldn't earn more than $25 a week. Crew will quit on you. Captain has to take the risk."

Ben is from Guinea Neck, one of many isolated fingers of land at the seaward end of the Middle Neck, not more than 30 or 40 minutes by car from Hampton. It is a prime example of that curious phenomenon of rural America, a special place around which legends grow and jokes are made. Sometimes the legends are so curious as to defy outsider understanding.

"You know what my daddy says?" a Piankatank River waterman once asked me. "He says you went down Guinea in a horse and buggy in olden times, and the high wheel catch the low wheel. That's what he says. The high wheel catch the low wheel. Wouldn't happen nowhere else."

Putting it all together, Captain Ben estimates his weekly operational costs at between $300 and $350. Getting the 25 barrel limit six days a week at the winter median price of $8 the barrel means a weekly net of $900. Times 16 weeks in the special season makes $14,000, not bad income for any four months' work. The fact that the State of Virginia's Marine Resources Commission is not deluged with applications for crab dredging licenses, which go for $30, argues most strongly that something is missing from these figures. What is missing are the variables: gale-force days when dredging is impossible. Ice. The bitter cold when the crabs are so deep in the mud that nine or ten barrels is a long day's catch. Loss or damage of dredges, which last no more than two years in any case, and consequent time in port for repair or replacement. Then there are those mornings when the captain finds an empty bed in the tiny pilothouse bunkroom. A

At sunset, dredge is hauled after one last lick.
Then *East Hampton* heads home with full barrels.

crew member has had enough, quitting without notice, and a dredge boat cannot operate with only one hand.

Prices may well go up later in the season—$25 per barrel was the absolute record, back in 1968—but this occurs only when the beds have been overworked and crabs are extremely scarce. In the long run, this combination is what worries Captain Ben most. Natural fluctuations in the winter crab population can be expected. But Ben believes too many off years, coupled with heavy dredging, might do irreparable harm.

Virginia scientists admit that winter dredging cannot possibly help crab stocks and they know it poses a natural disadvantage to Maryland's upper Bay crabbers. But try as they may, they have not yet found any real statistical basis for its prohibition. There are still too many crabs in the Bay to be able to recommend discontinuance with good conscience, which is not to say that winter populations must not be watched closely and daily catch limits adjusted accordingly. Scientists at Maryland's Chesapeake Biological Laboratory will say the same, although not so loudly, since they know where their bread is buttered.

Captain Ben and the fleet go out for as long as they can, even though they rarely catch the daily limit as the season wearies on to its disappointing close. Laws of supply and demand provide the incentive. The crabs are scarce and not very good looking, but prices will almost surely rise. And if the latter half of the season is mild and free of snow, the crabs will be that much easier to take.

Sooner or later, on a warm day in March, the crew members will tell you to take a close look at the color of the females' claws. "Look at them biters," one says.

"Crabs be crawling soon," the other says.

"Way I see it," the first replies, "wish they was cherry red right now."

The lay observer sees no change. But veteran crabbers insist. Later, when the claws grow redder, when the females once again brighten their fingernails, they have left their burrows. They are starting to crawl. On land the grass is already new green and the dogwoods and redbud are in blossom. No less dramatic changes are going on far below the water. All life forms, in fact, are stirring. Soon the dredges can be put away.

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7.
Steel-belted radial tires. Standard equipment.

8.
Safety bumpers, rubber protected, hydraulic-regenerative. Front and rear.

9.
Halogen fog lights. Standard equipment.

10.
The outside rearview mirror. Distortion-free, folds full forward *and* rear for pedestrian safety. Large, inside rearview mirror folds and breaks away on impact for driver and passenger safety.

11.
Central locking system. Locks all doors, trunk *and* gas filler port at the turn of a key.

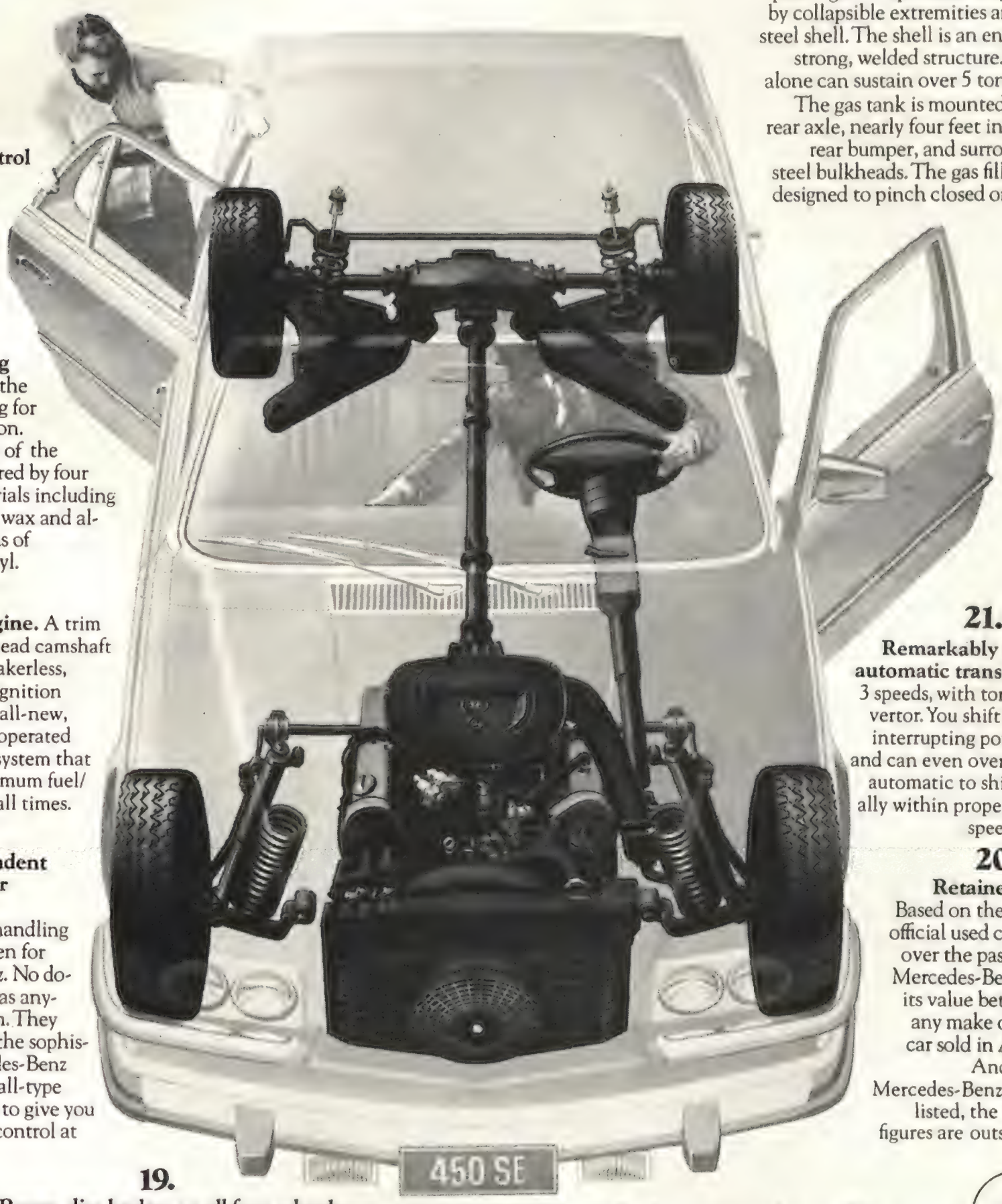
12.
Safety cone door locks. So strong that one of them can support the weight of the entire 450SE.

13.
Cockpit. Control panel has full instrumentation. Tachometer, quartz crystal clock, cruise control, AM/FM stereo radio, electrically operated windows are all standard equipment.

14.
Aerodynamically ribbed rear lights use airflow to stay clear in foul weather or on dusty roads.

The amazing Mercedes-Benz 450SE. Now, look at 8 things you don't see. You've still never seen anything like it.

You'll experience and appreciate some of them during your test drive. (Your Dealer can arrange it at your convenience.) The others are special Mercedes-Benz bonuses. All of them are standard equipment.



15.
Automatic Climate Control maintains a preselected temperature; dehumidifies, heats and cools.

16.
Undercoating extends up to the rocker molding for extra protection. The underside of the 450SE is buffered by four different materials including anti-corrosion wax and almost 24 pounds of plasticized vinyl.

17.
A unique engine. A trim 4.5 liter, overhead camshaft V-8 with a breakerless, transistorized ignition system and an all-new, mechanically operated fuel injection system that maintains optimum fuel/air mixture at all times.

18.
Fully independent front and rear suspension. They set new handling standards—even for Mercedes-Benz. No domestic sedan has anything like them. They combine with the sophisticated Mercedes-Benz recirculating ball-type power steering to give you extraordinary control at all times.

19.
Power disc brakes on all four wheels. The brakes are ventilated—then further cooled by special turboblades. They are designed to stop you smoothly, securely time after time—without disconcerting fade.

22.
Safety advances. The entire passenger compartment is protected by collapsible extremities and a rigid steel shell. The shell is an enormously strong, welded structure. The roof alone can sustain over 5 tons weight. The gas tank is mounted over the rear axle, nearly four feet in from the rear bumper, and surrounded by steel bulkheads. The gas filler pipe is designed to pinch closed on impact.

21.
Remarkably smooth automatic transmission, 3 speeds, with torque convertor. You shift without interrupting power flow and can even override the automatic to shift manually within proper engine speed ranges.

20.
Retained value. Based on the average official used car prices over the past 5 years, Mercedes-Benz holds its value better than any make of luxury car sold in America. And among Mercedes-Benz models listed, the 450SE's figures are outstanding.

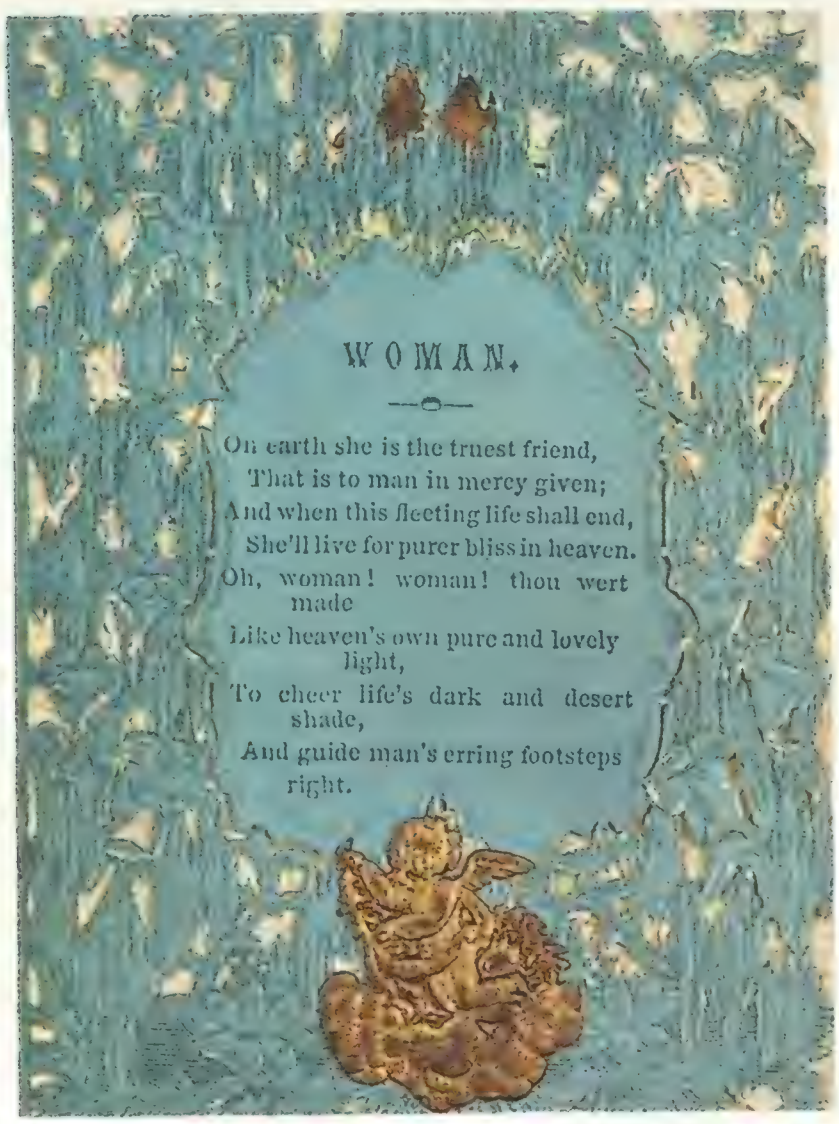
Mercedes-Benz

Engineered like no other car in the world.

©1975 Mercedes-Benz

Esther Howland, first to mass-produce valentines, designed this gilded card in the early 1860s.

Civil War card has tent flap that opens to reveal a gallant soldier writing to his


WOMAN.
On earth she is the truest friend,
That is to man in mercy given;
And when this fleeting life shall end,
She'll live for purer bliss in heaven.
Oh, woman! woman! thou wert made
Like heaven's own pure and lovely light,
To cheer life's dark and desert shade,
And guide man's erring footsteps right.

English printing, such as in this 19th-century valentine by Joseph Mansell, inspired Americans.

By Patricia Kaufmann

Saint Valentine's love note started it

Valentine's Day is more than 1,700 years old, but most cards, embossed and lacy, date from early 19th-century printing methods

With husband, the author runs John W. Kaufmann stamp auctioneers in Washington. Valentines are her hobby—she was married on St. Valentine's Day.

LOVE PROTECTS.
Strong is the warrior's arm,
That strikes for Fortune and Fame,
Thrice armed his stalwart form,
Who fights in thy dear name.

sweetheart. Such valentines were popular in North—where printers could produce them.

Cupid's Choice.
Love ne'er could pitch his tent-
Oer the whole world he went, But could not Till eyes He found. Adored
fix his throne, Beyond compare - and fixed it there - one, they're your own!

Bemused Cupid in this English card is choosing the reader over all the 19 other contenders.

No one seems sure just who Saint Valentine was. Some say a Roman priest, others the Bishop of Terni, a small town north of Rome. He is supposed to have been imprisoned for giving aid and comfort to the Christians during the pagan rule of Emperor Claudius II. The story goes that Claudius issued a decree forbidding Romans to marry (married men made poor soldiers), which Valentinus ignored. Instead, he encouraged young lovers to be wed secretly with the blessings of the underground Christian church. When these undercover marriages were discovered, Valentinus was thrown in prison to await execution.

While there, goes the story, he developed a friendship with his jailer's blind daughter and miraculously restored her sight. The night before his execution he wrote her a note, expressing his affection, and signed it "From Your Valentine." He was beheaded on February 14, the year varying from A.D. 270 to 273.

The use of valentines in America is first documented around the mid-18th century, and the best of the early handmade ones seem to come from the Pennsylvania Germans. These people are famous for their hand-

Ornate lacework marks an 1880s card. This, like most of the others here, is in Smithsonian.

Another valentine from the 1880s makes use of a classical Greek motif beside its lacery.

A German valentine, dating from the late 19th century, surrounds small boy and girl with animals.

made marriage, birth and baptismal certificates, and you have to know old German to differentiate their love tokens and marriage papers from valentines. With their ornamental cutouts, meticulous pinprick designs, ornate *Fraktur* writing and the same bright colors that appear in their hex signs, the Pennsylvania Germans produced charming valentines, many of which were used for marriage proposals.

Esther Howland, daughter of a bookstore proprietor in Worcester, Massachusetts, is usually credited with the first mass production of the lithographed valentines that the Industrial Revolution made possible in the early 19th century. Actually, a New York printing firm, Elton & Company, was probably the first, in 1833 or 1834. These earliest printed valentines were hand-colored and had no words, leaving room for the love-stricken sender to pour out his heart with his own pen. To help him compose effective verses, enterprising stationers sold "Valentine Writers."

Envelopes were coming into use at about the same time, and those for valentines were elaborately embossed to match their enclosures. To the sorrow of today's collectors, most envelopes were simply torn open and thrown away, so one of these old valentines with its matching envelope is a valuable find. The comic and vulgar valentines in vogue at the time are also rare finds. People weren't as careful about saving cards bearing such messages as:

'Tis all in vain your simpering looks,
You never can incline,
With all your bustles, stays, and curls
To find a Valentine.

Esther Howland's fame rests on her production of English-style valentines, rich with the embossing and lacework that high-quality linen paper allowed. After seeing a few imported valentines. Miss Howland determined in 1847 to make some of her own. She set to work, made a few samples, and soon had orders for several thousand dollars' worth for the next season. She recruited a staff of young women, formed an assembly line and gradually expanded the business to a $100,000-a-year enterprise and a monopoly of valentine production in the United States.

The Civil War inspired a great deal of patriotic

Some early cards left room for homemade verse, but Shakespeare provided these sentiments.

printing, much of it from the firms of Charles Magnus and Berlin & Jones. Both firms manufactured a limited number of valentines, now much sought after. They tend to combine patriotism with sentiment.

Among Esther Howland's employees was young George C. Whitney, who went off to fight with the 55th Massachusetts Volunteers, then returned and formed his own company with his brother Edward. In 1869 Edward broke away to form his own stationery business, and George continued turning out valentines, taking over the old firm of Berlin & Jones.

Whitney's valentines closely resemble those of Esther Howland, except for a small red "W" stamped on the back. His company continued in business until 1942, when restrictions caused by World War II closed it down. Meanwhile, in 1910, the Hall brothers had founded the firm of Hallmark.

Firm of George Whitney, who started with Esther Howland, produced this more recent card.

Small boy's arm moves, bringing heart into full view in this card from the early 20th century.

The East African Wildlife Society announces

The Official African Wildlife Bronzes

© 1976 FM

THE ELEPHANT · ACTUAL SIZE.

Six magnificent animal sculptures created exclusively for this limited edition

There will be only one edition of The Official African Wildlife Bronzes. Available by advance subscription only. Limit: one subscription per person. Subscription rolls close: February 29, 1976.

IN THE ENDLESS SUMMER of East Africa's Serengeti Plain, survival belongs to the strong and the swift. To the lion and the antelope. The elephant and the giraffe. The rhinoceros and the cheetah.

Since the beginnings of time, the magnificent wild animals of Africa have challenged the imagination of artists. And no artistic medium has proved better suited to capturing the power and grace of these animals than bronze sculpture.

The tradition of bronze animal sculpture is one of the great traditions in the history of art—one that has come to be increasingly valued in our own time.

Now, in this great tradition, The East African Wildlife Society is proud to announce an extraordinary series of bronzes—created expressly for this limited edition collection by Don Polland, one of the most noted sculptors in the world today.

The Official African Wildlife Bronzes

To create these sculptures, the artist traveled to Africa so that he could study the animals in their native habitat. Each sculpture is accurate to the most minute detail. Each is a superb original work of art, capturing the wild animal in a moment characteristic of its life in nature.

The Lion pauses in mid-motion. His limbs are stretched to the full, the long muscles sharply defined. His teeth are bared, his claws extended, and he is ready to break into the fearsome attack that has made him lord of the plains.

The Greater Kudu—a large African antelope with twisting horns—stands poised for flight, head turned to the wind. The carriage of his head, his flared nostrils, his taut leg muscles—all are captured with remarkable skill.

The Elephant is charging, ears out, trunk raised, turning as he comes. His tusks have all the power of his mighty body behind them. You can almost hear him trumpeting his anger.

The Giraffe has just heard some distant sound across the plain. He stands tall and attentive, head cocked, ready to break into a run or to defend himself with his powerful legs and hooves.

The Rhinoceros stands ready for battle. He fears no other creature. Descendant of the dinosaurs, his hide is like armor-plate, and his short legs can carry his bulk with surprising speed. Irritable, near-sighted, he low-

ers his formidable head with its dreaded horn, which was long thought to have magical properties.

The Cheetah —fastest of all animals —seems to flow over the ground. He is captured in a running bound, in the intensity of his pursuit.

Each sculpture is completely true to life, sculptured in superb and authentic detail. The hairs of the elephant's tail, and the markings of his hide . . . the ringlike serrations of the kudu's horns . . . the extended claws of the lion . . . each fine detail is sculptured with absolute fidelity.

Individually hand-cast in bronze

Each of these bronze sculptures will be individually hand-cast by the ancient "lost wax" *(cire perdue)* process. This casting technique is an art which has been passed from father to son through the generations. It is the same painstaking, time-consuming method that was used by Cellini, by Rodin, by Frederic Remington.

After casting, each bronze sculpture will be individually finished by hand. This hand-finishing imparts a special patina to the bronze, and calls for meticulous craftsmanship.

Because each bronze will be produced to order, it will take several months to complete the work. Therefore the six sculptures in the complete collection will be produced and delivered as a series, at the rate of one every three months.

A single, strictly limited edition

There will be only one edition of The Official African Wildlife Bronzes. The sculptures will be issued *solely and exclusively to original subscribers.* No one else will be given the opportunity to acquire this collection. The sculptures will not be available individually, and they will not be sold through art galleries or stores. They are available *only* by direct, advance subscription.

The absolute closing date for all subscriptions is February 29, 1976. And there is an absolute limit of one collection per subscriber.

The advance subscribers will be *the only people in the world* to acquire these bronzes at the original issue price. Those who later desire to acquire the collection can only hope to obtain it from one of these original subscribers.

The East African Wildlife Society has appointed The Franklin Mint, world-renowned for the quality and artistry of its limited edition collectibles, to direct the creation and production of these sculptures and to service all subscriptions.

Because of the extensive handwork involved in the making of these bronze sculptures, The Franklin Mint must reserve the right to limit the number of subscriptions that will be accepted. Therefore, all subscription applications are subject to acceptance by The Franklin Mint.

The subscription plan

The first sculpture in the collection will be sent to subscribers approximately eight to ten weeks after subscription rolls close. The remaining five sculptures will be issued thereafter at the rate of one every third month.

THE GREATER KUDU - DETAIL ACTUAL SIZE.

The official issue price is $120 for each sculpture, payable in three equal monthly installments of $40 each.

Thus, you will be able to acquire this extraordinary collection of limited edition bronze sculptures on a convenient monthly basis.

Please note carefully that this is *the first and only time* The Official African Wildlife Bronzes will ever be offered. All subscriptions must be postmarked by February 29, 1976, to be eligible for acceptance. The total edition will be permanently limited to the number of subscriptions postmarked by that date and accepted by The Franklin Mint. Subscription applications will be accepted in order of receipt, and it may be necessary to close the subscription rolls before February 29, 1976. It is therefore suggested that applications be entered promptly.

THE LION - ACTUAL SIZE.

ADVANCE SUBSCRIPTION APPLICATION

THE OFFICIAL AFRICAN WILDLIFE BRONZES

Valid only if postmarked by February 29, 1976

Limit: One collection per subscriber

The Franklin Mint
Franklin Center, Pennsylvania 19091

Please accept my subscription to *The Official African Wildlife Bronzes,* issued by the East African Wildlife Society. This collection is to consist of six bronze animal sculptures to be issued at the rate of one every three months. The cost of each sculpture is $120.* which will be billed to me in three equal monthly installments of $40.* each.

I need send no money now. I will be billed for the first installment of $40.* in advance of shipment of the first bronze sculpture.

** Plus my state sales tax*

Name_____
PLEASE PRINT CLEARLY

Address_____

City_____

State_____ Zip_____

Signature_____

All orders are subject to acceptance by The Franklin Mint.

By Marshall Smith

A bird? A bullet? No, it's supergull

In balmy Key Biscayne a cheeky herring gull —a veteran ham actor—chooses to consort with, and also bedevil, human sports-lovers

He doesn't carry a watch, but he seems to know from minute to minute what time it is and how to keep a tight schedule. He is never late for a golf match. He fancies himself a tennis enthusiast, and while no great shakes at the game, he knows where the action is and gets there on time. He pauses on his rounds to hobnob with friends. But at 2 P.M., no matter where he is, Charlie takes to the air in search of a swimming pool. Charlie is a most unusual gull.

The people of Key Biscayne, Florida, know him because he is larger and whiter than other gulls, almost the size of a chicken. He has lavender legs with a hole in the webbing of one foot. He disdains the company of other birds and the slightly polluted waters of the Atlantic. He wouldn't be caught dead foraging for his own food. He is arrogant, unafraid, self-centered and rather condescending. He demands the best out of life, including the adulation of any humans in his neighborhood, and succeeds in getting it without working very hard.

At heart Charlie is a showman, but the stunt that brings him the most acclaim is his afternoon bath. He plops down unannounced in any convenient pool, startling women in fussy bathing caps and men on rubber rafts, and goes into his routine. The first reaction of strangers is to get out of the water. Charlie has emptied a lot of pools in his day. But at the Sonesta Beach Hotel, one of his favorite watering places, poolsiders until recently looked forward to his arrival.

They lined up, cameras at the ready, when Charlie circled overhead and came in for a landing. Pool manager Alex Ballora warned them not to feed or touch the bird. The show lasted about ten minutes and included somersaults, body rolls and wing-preening. "He was Key Biscayne's most photographed celebrity since Richard Nixon left the island," Ballora says.

After his afternoon bath, Charlie hopped out of the pool, nonchalantly relieved himself, and dried off under a chair. But someone complained to the board of health that a herring gull was sharing the pool with humans. So the hotel banned him from the pool, and after five days of having water splashed in his face Charlie took the hint and took off. He still takes a daily swim at the Key Biscayne Yacht Club with

There's something about golf bags, at the Key Colony Golf Course, that Charlie can't leave alone.

Breasting the waters of a Florida pool, Charlie easily keeps up with another morning swimmer.

Mrs. Phyllis Strauss, who regularly does two miles.

Being front and center, with the cameras clicking and grinding, was nothing new for Charlie. At an earlier age, under a different name, he appeared in one full-length movie and 23 TV episodes starring Salty the Sea Lion, and made one trip out of the country to a shooting location in Nassau.

His name was Sailor in those days. He is a herring gull (scientific name *Larus argentatus smithsonianus,* as a Smithsonian-associated scientist christened the species after doing research on it in 1862) that had flown south of his normal habitat and had been captured because of his size and unusually white plumage. He lived behind the Seaquarium on Virginia Key, where the Flipper series was made. He got to know porpoises and sea lions and dolphins. He could do tricks like picking up fountain pens and retrieving table-tennis balls without training.

One night, finding himself unattended, he went across the bridge to Key Biscayne for a change of scene. For a time he masqueraded under the alias of George. That's what Norman Riddle, the bearded dockmaster at the Key Biscayne Yacht Club, called him. He invoked squatter's rights at the end of Riddle's fuel dock and chased all the other gulls out of the area. He refused any handouts from accommodating boat owners except Swiss cheese and the most expensive canned salmon. He got his main meal from friendly fishing

boat captains at the marina, dining on squid and pompano fillet while lesser birds squabbled over the entrails being tossed overboard.

One day Charlie discovered tennis, but his interest in the game was short-lived. An irate matron came charging off the courts screaming: "Come get this damned sea gull! He's collecting all our tennis balls and piling them in a corner." Shortly thereafter, knowing when he wasn't wanted, the gull departed for other sports scenes.

He began frequenting the public courts at Calusa Park, pecking at women's ankles and flying away with their tennis balls. But the new passion of his life turned out to be golf.

Out of curiosity, he walked a few holes with a retired insurance man, a retired FBI agent and a retired doctor. That did it. Now, at 7:30 each morning, Charlie appears over the first tee, lets out a few squawks, and comes in burbling and cooing. During the course of play, he removes golf balls from sand traps and improves bad lies in the rough. "We consider it the rub of the green," says Paul Burns, one member of the golfing group, but there is speculation about whether Charlie may be the feathered reincarnation of a departed member of their foursome who passed on several years ago.

Nobody knows any longer where Charlie spends his nights. But he has been seen at outdoor cocktail parties flying into the sunset with a golf ball or chartreuse tennis ball. After three martinis the conversation gets heated about whether he is taking the balls off to his nest to hatch them. More likely, he's selling them.

At Calusa Park, Charlie—unable to resist any stray tennis ball—furtively gets ready for a heist.

"His basic strategy consists of handshaking and street-cornering his way into familiarity."

PHOTO: STEVE DEAL

"Jimmy who? That derisive question was often asked in Georgia when the peanut farmer first ran for governor in 1966. But not when he made it on his second try, in 1970."

The handshaker and street-cornerer is Jimmy Carter, ex-Governor of Georgia and the subject of a capsule biography, one of a series exclusive in TIME, on 1976's presidential hopefuls.

You might have begun this article thinking "Jimmy who?" But after you were finished you would know him well.

TIME

The series *Candidates '76* demonstrates a basic habit of mind at TIME: that you understand the news better when you understand the people who make the news.

You know what TIME does. And reading it every week reminds you how well.

The Weekly Newsmagazine

National 4-H Forestry Award winners, front to rear: Jeffrey Little, John Pfleiderer, Melinda Hadden, Craig Jerabek, Steve Welches, and David Doherty, Jr.

How six 4-H members became the proud parents of over 60,000 baby trees

In the year 2000, Americans will use about twice as much paper and wood products as they use today. And the U.S. Forest Service predicts that America's commercial timberlands won't be able to keep up with the demand.

Our hope lies to a great extent in concerned *young* people—like these six teenagers who won the National 4-H Forestry Award and scholarship. These young people show just what can be accomplished. And that's why we're sponsoring the awards: to encourage people to start young—thinking about the future of America's forests and doing something about it.

Enough trees to keep a city going

Together, Craig Jerabek, David Doherty, and Jeffrey Little planted over 57,000 of the 60,000 seedlings—enough to keep a city of 16,000 people supplied in paper for an entire year when the trees are grown.

Melinda Hadden's specialty is *Christmas* trees—she's planted 1,200 of them. She's also planted about 300 trees for homeowners whose trees were destroyed by a violent windstorm.

John Pfleiderer has researched and fought Dutch elm disease—a killer which wiped out many of Greeley, Colorado's most beautiful trees. (John also taught himself grafting—and created new forms of trees.)

But there's more to a forest than just trees. Healthy forests are a complete ecosystem. That's why Steve Welches has planted over 1,200 shrubs for animal cover. And why David Doherty has built dens and brush piles for rabbits and small game birds. (And succeeded in bringing them back to land that was once ravaged by Hurricane Camille.)

Fortunately, these six teen-agers aren't alone in their commitment. There are 100,000 *more* 4-H members also working in forestry.

And forest companies pulling on the same team.

International Paper shares the burden

We've developed a Supertree—a southern pine that grows taller, straighter, healthier, and faster than ordinary pines.

We're experimenting with a new machine that can harvest an entire tree—taproots and all. We're moving ahead on projects like fertilization techniques. Tree farm programs. Forest research.

We'll show a private landowner how to prepare a site, plant, protect, thin, and harvest—at no charge. (In some cases, *doubling* his yield.) For this help, IP gets the right to buy a landowner's timber at competitive prices.

More to be done

Will all this be enough to keep the world's fiber supply going strong? It'll help. But more must be done.

At International Paper, we believe forest products companies, private landowners and government should work together to develop more constructive policies for managing America's forests. The wrong policies can make tree farming impossible and force the sale of forest land for other purposes. The right policies can assure continuation of America's forests—a renewable natural resource.

If you'd like more information about what has to be done to assure the world's fiber supply, please write to Dept. 162-A, International Paper Company, 220 East 42nd Street, New York, New York 10017.

INTERNATIONAL PAPER COMPANY

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By John Stewart Massey

Ginseng, folklore cure-all, is being regarded seriously

Its scientific name means 'panacea,' which it is not, but ginseng does seem to combat fatigue. Many countries are examining other properties.

Ginseng grows under straw shelters on a plantation in South Korea, where 80,000 farmers raise it.

After at least 2,000 years, Western medicine is now starting to take acupuncture seriously. Next may be ginseng, a remarkable root used in Oriental medicine as a tonic, rejuvenator, universal panacea—and aphrodisiac—sometimes worth more than its weight in gold.

The name means "man-shaped root," for ginseng root sometimes resembles a human body, a shape that in Chinese medicine denoted its use for all organs of the body. From its reputation as a panacea—still current in Southeast Asia—comes its name *Panax ginseng*. The most highly regarded species is properly called *Panax ginseng* C. A. Meyer (named for Meyer, a Russian botanist), which grows in parts of China, Korea and the Soviet Far East. Other species, considered medicinally inferior, are found in Japan, India and North America.

Medical research on ginseng has begun in Europe and Asia, and a first tentative conclusion is that it is a nonhabit-forming stimulant. But jumping the gun of Western medical acceptance, several million people in Western Europe and North America already are taking ginseng in root form or as a tea or powder, and the practice is fast increasing. Virtually every health-food store in Britain now stocks ginseng. Sales in one London store, for instance, have tripled in the last year, and many British drugstores now stock Pharmaton capsules, a Swiss preparation combining ginseng with vitamins and minerals which, after 13 years, is a best seller on the Swiss market.

Such, evidently, is ginseng's popularity in West Germany, where the capsules alone have 800,000 customers, that a young man forced a Berlin herb-shop owner to hand over at the point of a gun two parcels of ginseng roots.

In the United States, ginseng is very popular among both health-food store patrons and show people. They are only following the lead of Japanese soldiers in World War II and Viet Cong officers, both of which groups received regular issues.

The Chinese have regarded ginseng as an elixir of youth, with long use reputedly preventing wrinkles, for instance, and allowing elderly men to sire children. Certainly in China today it is widely used in a great many Chinese herbal preparations, and most old Chinese who can afford it take it.

Ginseng has a remarkable history. First recorded in an ancient Chinese herbal of the first century B.C., wild ginseng was an article of tribute in China as early as the T'ang dynasty (A.D. 618-907). Emperors later monopolized the right to gather roots and appointed special ginseng gatherers, and indeed set aside special areas as imperial ginseng preserves; they had the best

An Oriental painting depicts "The Picker of Medicinal Herbs," a seeker of prized wild ginseng.

quality ginseng administered to their most valued officials when seriously ill. One emperor sent two pounds of it as a precious gift to Peter the Great, and such was the permanent demand that a 19th-century emperor had to issue a decree protecting it from extermination. (Ginseng still turns up in diplomatic circles. Daniel Patrick Moynihan, the U.S. ambassador to the United Nations, was reported last fall to have presented some ginseng to a representative of the People's Republic of China.)

Ginseng seems to have been brought to Europe for the first time by Dutch merchants; in 1697 the French Academy of Sciences conducted a discussion on the root. Then, in the early 18th century, Père Jartoux, one of the Jesuit missionaries traveling thousands of miles though Manchuria to compile its first accurate map for the Chinese emperor, produced a report and drawing, later published in Paris, of "the famous plant ginseng so much esteemed in China and so little known in Europe."

Jartoux's own account was read by a fellow Jesuit, Père Lafitau in Canada, who in 1716, after a two-year search, found *Panax quinquefolius,* an inferior kind of ginseng, growing near Montreal. Indeed it grows wild (and in much greater profusion than *Panax ginseng*) in the shady hardwood forests of Eastern North America between the latitudes of Quebec and Georgia, and it has long been used by many Indian tribes.

Lafitau's discovery brought Chinese merchants to North America seeking these new supplies of ginseng, and the European settlers soon realized what market lay open. A "wild ginseng rush" began with thousands of Canadians and Indians involved.

Farther south, too, the trade developed. By 1773 one sloop had sailed from Boston for China with 110,000 pounds on board. In 1784 George Washington recorded of the extensive and highly profitable trade: "In passing over the mountains, I met numbers of persons and pack horses going in with ginseng. . . ." John Jacob Astor shipped ginseng to China regularly during the first quarter of the 19th century. In 1862, 622,781 pounds were exported. Only in the 1870s was American ginseng cultivated successfully, by one Abraham Whisman in Boones Path, Virginia. Cultivated Amer-

Appalachian ginseng goes to central points like this multipurpose Tennessee warehouse for shipment.

ican ginseng launched a new boom between the years 1895 and 1904. Hundreds of plantations were started and companies formed, many of them only to be ruined by leaf disease in 1904.

Now every autumn thousands of rural people gather wild American ginseng in the Appalachians for shipment to Asia and to Europe. In 1974, 221,000 pounds of American ginseng went to Hong Kong, from where it was reexported throughout the rest of voracious Southeast Asia.

The seasonal nature of the wild herb business makes for some unusual combinations, as witness the picture above. The Elizabethton Herb and Metal Company, Inc., survives by dealing in witch hazel, herbs, coonskins, and automobile radiators and other scrap metal, as well as ginseng.

Most of the world's cultivated ginseng comes from South Korea. Because Korean wild ginseng just could not meet the ever-increasing demand, it has been cultivated there since the 16th century. Today, 80,000 South Korean farmers grow it by a complicated process —often after a shamanistic ritual—in specially treated soil; in 1973 the country exported $23 million worth to 24 countries.

From the air one sees countless patterns of ginseng cultivation: pockets of pale brown straw shelters, row upon row, protecting from both sun and rain the precious root in its slow six-year growth to maturity.

Ginseng's mystique has led the Koreans, unwisely for the root's pharmaceutical reputation, to market it not only as root, extract powder, instant tea sachets, capsules and drink, but as ginseng candy and chewing gum, chicken essence, skin lotion, hair tonic, eye cream, mask pack, shampoo, soap, jam, marmalade, liqueur (the root curled in the bottle), and even "Napoleon De Luxe Ginseng Brandy"—not to mention ginseng whisky, "a blend of Scotch malt whiskies imported direct from Scotland and extra quality Korean ginseng," with the label printed in Scotland.

Even in South Korea ginseng is beyond the purses of the poor: more than $15 for a 300-gram packet of white ginseng root, which is anything between two and a half to four times cheaper than the (cured) red under government monopoly control. In London one shop sells instant ginseng tea at $22 the box, and a four-inch cultivated Korean root for $9 to $13.

But these prices are nothing compared to that of the rare wild root of *Panax ginseng* found only in remote parts of Manchuria, Korea and the Soviet Far East. In South Korea, where popular belief maintains a wild root can give ten years' more life, only two or three are found a year and fetch—according to age, weight and size, but no longer apparently the degree of "man-shape"—between $1,000 and $2,000 each, enabling the finder and his entire family to live for at least a year off the proceeds.

One Chinese pharmacist in New York is supposedly willing to pay up to $10,000 for a top quality wild root, and the Russian wild root displayed in the agricultural pavilion of Moscow's Achievements Exhibition is reputedly insured for 25,000 rubles or $34,750.

Five hundred professional Soviet ginseng hunters still look for the precious wild root high in the forested and almost inaccessible parts of the Sikhote Alin range northeast of Vladivostok, staking claims or secretly marking plants not yet mature, all the while following time-honored rituals.

The root itself—this a cultivated specimen of the preferred Meyer variety—looks only vaguely manlike.

Seven nations sent representatives to an international symposium on ginseng conducted in Seoul in 1974.

One Soviet student-teacher's ambition is to find a 22-root wild ginseng plantation—by now probably multiplied to several hundred—that has been lost for half a century after being presented to a Russian explorer by a local native.

While cultivated ginseng deteriorates badly after ten years, the older the wild root, the more efficacious it is considered—and expensive. Roots as old as 20 years are seldom found, but in 1972 a Soviet forestry employee in Maritime Territory discovered a root that took him three hours to extract carefully with all its fine rootlets intact. His find proved to have five branches each more than a meter long; it weighed 320 grams and was thought to be about 200 years old. An even older one found five years earlier in the Soviet Union was believed to be 400 years old. But in Hong Kong refugees from China still talk of 1,000-year-old wild roots found very occasionally on C'hang-pai Mountain on the China-North Korea border, a famous area for ginseng. Botanists, however, regard ages of more than 100 years with much skepticism and as part of ginseng's vast mythology, just as they do the contention that wild ginseng will grow only in radioactive soil.

Over the millennia ginseng's reputation has swelled to that of a near-miraculous root, accumulating more folklore and myth than any other plant. Truth and superstition need a great deal of careful sifting out.

What are the claims of its medical supporters? Chinese doctors believe it can treat debility, anemia, insomnia, neurasthenia, gastritis and dysentery. In diabetes ginseng is thought to reduce the blood's sugar content and increase the necessary glycogen. It is also used to treat both low and high blood pressure, arteriosclerosis, cancer and malaria, and is now seen both as a histamine liberator and a promoter of cell and tissue growth. Ginseng, like other medicinal herbs, is often grown in the backyard of a hospital. And yet an herb like ginseng is rarely used alone. In most Chinese cities, traditional medicines like ginseng and the Western remedies are displayed side by side in pharmacies.

The Koreans claim ginseng contains at least 13 minerals as well as trace elements. A professor at Seoul's College of Oriental Medicine believes that the various properties of Korean ginseng can serve as a sedative as well as a tonic or stimulant in cases of inertia or fatigue, while when combined with certain other specific roots or tubers in different preparations it decreases fever, increases temperature and diuretic action, and stimulates digestion. A colleague claims ginseng also can cure baldness, tuberculosis and cirrhosis of the liver. Not enough is yet known to laugh off so many claims, and certainly a lot of plant drugs are known to have many actions, particularly in contrast to the much narrower action of synthetic drugs on the market.

What in fact does wisely cautious Western medicine,

John Massey Stewart, a London writer-photographer, frequently travels in the Soviet Union and Far East.

which has rejected ginseng out of hand, now accept after these first years of research?

One of the world's leading experts on plant drugs is E. J. Shellard, professor of pharmacognosy at London University. "Ginseng," he says, "is an old, much maligned drug that is being reexamined. . . . It has anti-infective and antifatigue properties and there is accumulating evidence of its antistress activity. . . . In many persons—but not all—it delays mental and physical fatigue." Ginseng's active substance he believes to be certain glycosides not found to date in any other plants and mainly responsible both for the stimulant effect and for an increase of the body's resistance to infection. But he is not convinced the legendary panacea can actually cure anything.

Can there be any truth whatever in ginseng's alleged powers of rejuvenation and longevity? Stephen Fulder, a human biologist working on the aging process at the British National Institute for Medical Research, believes not. But, he says, "Ginseng is a likely possibility for an herb which can improve the general health and vitality of old people by delaying the onset of degenerative conditions associated with old age; for instance, impotence, arthritis, arteriosclerosis. I think ginseng may be proved in time to really help with these conditions. But no one yet knows how it works."

And as an aphrodisiac? Though ginseng has never been used primarily as such in the Far East, despite popular mythology, some medical opinion suggests it influences the testes and ovaries. Both Russian and Chinese medicine have already used it to help the impotent. Fulder believes it has no sexual effect and that any such claims can be ascribed either to a placebo effect or simply to its overall nature as a mild but nonspecific stimulant.

"As for any side effects," he says, "they would have been discovered over the past 2,000 or so years, and the evidence for ginseng's efficacy is lacking only in the West—not the East—with a credibility gap between."

Britain, France, Italy, Finland, Bulgaria, Korea and Japan are among the countries that have been investigating the mysterious root. But perhaps more research than elsewhere has been done in the Soviet Union, where the Academy of Sciences has its own experimental ginseng plantation in the Soviet Far East and where, after 12 years of laboratory tests and clinical trials led by Professor I. I. Brekhman of Vladivostok, ginseng became part of the Soviet pharmacopoeia in 1961—although demand far outstrips supply.

Soviet scientists discovered that proofreaders, telephone operators and coding clerks all worked significantly faster and more accurately on ginseng. They

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are certain that ginseng stimulates both mental and physical energy and heals burns quickly, and Soviet cosmonauts are said to be given it for its antifatigue, antistress and anti-infective properties. A Russian postage stamp commemorating ginseng appeared in 1973.

Recently, research into the root has produced contradictory results, but Professor K. Karzel of Bonn University finds this unsurprising in view of the large number of ginseng's different chemical compounds detected to date.

In 1974 Karzel and other experts from seven countries attended the first International Ginseng Symposium, held in Seoul. Among the medical findings announced were: Ginseng extracts have increased the duration of running ability in animals; some ginseng activities are only demonstrable in stressed or injured animals; in rabbits ginseng has prevented the development of fever induced by typhoid or paratyphoid vaccine; ginseng can prevent change of body temperature in animals and helps them withstand temperature stress. The occurrence of constituents with sex hormone activity in ginseng preparations also seems proved, and Japanese biochemists now suspect parallels between ginseng and various hormones.

One doctor administered large doses of poison to rats after treatment with ginseng—and failed to kill

Korean ladies buy ginseng in a Seoul shop. It comes in forms from powder to shampoo and chewing gum.

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them. In his clinic he has also successfully treated patients suffering from neurotic and psychotic depressive tendencies with ginseng extract combined with vitamins and trace elements. One British research laboratory has established that very low doses of a ginseng extract enable mice, after 28 days of treatment, to swim up to half again as long before exhaustion sets in as can untreated control mice.

Because there was some difficulty in finding humans to swim several times to drowning point, ginseng researchers have settled for a group of British physical training instructors in Liverpool who are at present undergoing tests.

Will ginseng become medically respectable in the West? Professor Ludwig Horhammer of Munich University, who has started research on ginseng planted at different temperatures in greenhouses, expects to see it in the German pharmacopoeia in perhaps ten years' time.

But ginseng still retains more secrets than it has revealed. Why does it have quite so many pharmacological contradictions? Why does the root stop growing for a year if its "brain heads"—the round protrusions at the top of the plant—are damaged? Why will ginseng not grow again in the same soil for 10 to 20 years? Because it extracts so much nitrogen? Why is metal not used with ginseng? (The root is boiled always in an earthenware vessel and its skin scraped with a wooden knife.) No one yet knows the answers and nothing like enough research has been done.

But when all the research has been completed, how much may be in the mind of the believer, particularly after a hundred generations of use and faith in what are perceived to be supernatural and quasi-human powers?

The stories of ginseng are legion: that wild ginseng was supposed to walk about at night; that ginseng hunters tracked down the wild root after dark by its luminous glow and shot arrows to mark the site where the light would go out (glowworms, suggests Fulder). But the strangest of all ginseng tales is perhaps that of the "mushroom of the dead."

When a rich Chinese was about to die,

Ginseng roots in jars decorate a Chinese medicinal shop in Seoul; plant is used frequently as an ingredient in Chinese herbal preparations.

a strong dose of ginseng would be administered to prolong his life so that his far-off relatives might attend. Ginseng vapors from the corpse would (it was claimed) then condense on the coffin interior, forming after many years a mushroomlike solid protuberance known as "the mushroom of the dead" and sought by grave robbers, for this was in turn a precious medicinal substance, particularly against tuberculosis. Old China hands saw the alleged "mushrooms" on sale in Shanghai earlier in this century.

Today, after more than 2,000 years of use by man, wild *Panax ginseng* is probably one of the rarest, most valuable and consequently, alas, most threatened of all of the Earth's flowering plants. The American wild root at least, it is hoped, shortly will be protected.

Medicinally, the West should not discount ginseng—and one hopes *cultivated* ginseng—automatically: For those 2,000 years, some millions upon millions of people have used it.

An old story in Asia, but elsewhere one that perhaps has scarcely begun.

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How one company's people and products are helping find the answers to some of the world's problems

Kansas City Water Department engineer takes a sample of Missouri River water for use in some of the 1,200 laboratory tests conducted every day.

New efficiency in purifying 'Big Muddy'

Each day the Kansas City, Missouri Water Department has the enormous job of pumping and purifying 100 million gallons of water from the Missouri River, which by the time it gets to Kansas City, has really earned its nickname, "Big Muddy."

In the summer of 1973, the city water department installed an IBM computer to help it operate more efficiently. The computer's immediate contribution was in more productive use of electricity. The average peak power demand per million gallons pumped has been cut by 13 per cent, and city officials say the system has more than paid its way in power savings.

More recently, programs have been developed to use the computer to improve procedures in the purification process itself. The department conducts an average of 1,200 laboratory tests a day. That figure may rise to 6,000 a day in the winter and spring when rapid variations in the quality of the river water make the process of water purification most difficult.

According to water department officials, the computer helps the staff respond more quickly to changes in the river and to reduce the overall use of chemicals needed to purify the water. The result is consistently better drinking water with greater control of costs for the people of Kansas City.

Less paperwork for policemen

The police in Longview, Texas report spending more time on patrol and less on paperwork since installing IBM typing and dictating equipment. Immediately after investigating a crime or an accident, an officer dictates his report from the nearest phone. It is recorded and typed in draft by a clerk. The typewriter then produces final copies automatically at 150 words-a-minute. According to police officials, the system gives patrolmen and detectives more time to do the most important parts of their jobs. It also provides fuller, more accurate reports because the officers dictate them while the facts are still fresh in their minds.

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Financial assistant Marcia Shannon, using small computer, finds she can complete reports in an hour that used to take two or three days.

Small computer proves effective tool in managing small business

In today's economic climate, business management is becoming increasingly complex. Large companies have been able to keep pace with this complexity by using modern data processing techniques. But in the past many small businesses simply could not afford the necessary equipment.

IBM's System/32, a computer specially designed for small business, was introduced to meet this need. The first company to install it was Midwest Industries, an Omaha, Nebraska construction firm. Within a month the company was making significant savings.

"When we did our job cost reports manually, they could get so far behind that it was nearly impossible to make meaningful management decisions," says Midwest chairman Al Daubman. "Today, all our information is kept right up to date on the computer. We can look at each current project and try various adjustments to increase our productivity and profitability. We've already found and corrected one problem that was costing us three times what we're paying for the computer."

The System/32 is the first IBM computer to be marketed with complete industry application packages available right from the start. This enabled Midwest to begin producing reports the day after the computer was installed.

"Our reports are much more readable than they were before, with far more accuracy," says financial assistant, Marcia Shannon. "With the System/32, I can now complete a report in one hour that previously took me two to three days to do by hand."

Administrative productivity helps hospital meet growth problem

With the rise in the demand for health care, many small hospitals need to increase productivity in handling the reports required by government and private health insurance programs.

Taft Hospital, in San Patricio County, Texas faced such a productivity problem in 1973. Taft had 40 beds, 112 employees, two doctors—and 60 percent of its patients on Medicare or Medicaid. Taft met the challenge by installing a small IBM computer. "We were facing a three-month backlog of paperwork," says hospital administrator Leo Davis, "and it was getting worse every day, with more requests for reports. Before we developed our computer system we simply couldn't comply."

Today, according to Mr. Davis, the hospital's paperwork stays current with the help of the computer. This, he says, has made it possible for Taft to contemplate future growth. Since solving the problem, the hospital has increased its staff by four doctors and is adding 40 new beds this year.

Practical texts help math teachers and students

According to a recent survey, 61 per cent of Americans between the ages of 26 and 35 can't decide whether the "large economy size" in a grocery store is really more economical, and 60 per cent can't figure out the cost of new carpeting for a room.

To better equip children for such everyday calculations, a highly effective math program for elementary schools has been developed by Science Research Associates, a subsidiary of IBM. In two years of field tests across the country, student achievement scores were 15-49 per cent higher than normally expected for grades one through eight. The program now is being adopted for regular use by many schools nationwide.

Teacher Susan Phillips of Underwood Hills School in Omaha involves students in solving math problem.

The textbooks and teacher guides, designed to make it easier for children to learn—and for teachers to teach—focus on *practical* math. While there's still plenty of drill to ensure mastery of the basic skills, many of the problems deal with everyday situations such as the supermarket or the cafeteria so that students can see the usefulness of what they are learning. Since some students learn faster than others, the program can be individualized to help them progress at their own pace.

IBM®

By Duncan Emrich

A Yankee gift to a Bengali

President-sized Washington portrait crossed seas to grace the home of a self-made Hindu multimillionaire

When I arrived in steamy Calcutta in 1959 to work with the U.S. Information Service, an enigmatic item of someone else's unfinished business lay on my desk. It had been bequeathed to me by a departing foreign service officer; it concerned a valuable painting of George Washington that had been kept in India, of all places, for more than a century and a half; its repatriation to America was destined, though I could not know it at the time, to be a preoccupation of mine for years to come.

It had belonged to one Ramdoolal Dey, a long-forgotten Hindu multimillionaire, and had passed into the hands of another Bengali family, the Malliks. The word was that they now wished to sell it.

Ramdoolal Dey, born into a family of beggars, rose to be a shipping mogul.

Besides being a city of hovels, Calcutta is known as the City of Palaces, and the home where I sought out the painting was properly palatial: a massive cube at 12 Wellington Square, the splendid residence of H. C. Mallik (p. 118). This was in April, sticky hot, the temperature at 106 and the humidity in the 90s. And there the painting was, six by nine feet, larger than life, remarkably well-preserved—if a little dingy with time—after its many decades in that fetid climate. It was hung, cramped for space, in a stairwell alcove. Mr. Mallik, a big man for a Bengali and soft-spoken, discussed it. He was, he said, the grandson of the Mallik who had bought the painting at an auction from the grandson of its original owner, Ramdoolal Dey. The painting, therefore, had passed through six generations from Ramdoolal Dey to H. C. Mallik.

Who was this mysterious Ramdoolal Dey? And how would a portrait of George Washington have come into his possession from America at the beginning of the 19th century? Mallik did not know. To track down the answers I went to the Indian National Library at Alipore, Calcutta, once the magnificent dwelling place of British governors, local seconds-in-command to the viceroys of India. After some searching Indian librarians came up with a rich clue, a 62-page pamphlet by Grish Chunder Ghose, a scholar who had been a mover and shaker in the Bengali theater.

The title was *A Lecture on the Life of Ramdoolal Dey, The Bengali Millionaire, Delivered in the Hall of the Hooghly College on Saturday, the 14th* [*of*] *March, 1868*. In typically overblown Bengali prose it traced the story of the amazing man, "one of nature's aristocrats," to whom the George Washington portrait had been given long ago.

Ramdoolal Dey, the lecture related, was born in 1752 in the open fields near Dum Dum, later the site of the cartridge factory that produced the terrible bullets that made a neat little hole going into a human body and a hole the size of a fist going out. The area is now East India's international airport, but at the time of Ramdoolal's birth, four years before the Black Hole of Calcutta episode, it was a

prowling-ground of bandits and leopards, the sky overhead cruised not of course by jet traffic but by vultures.

Ramdoolal's abjectly poor parents died when he was a few years old and he went to live with his even more abjectedly poor maternal grandparents. Ramsoonder Biswas, the aged head of the household, "lived upon the fruits of beggary, the lowest kind of beggary, beggary by the handful." And not handfuls of coins but of rice. But when Ramdoolal was still a child, with a career as a beggar his likeliest fate, he got a break. His grandmother found work as a cook in the house of Mudden Mohun Dutt, *dewan* (chief agent) of the Export Warehouse and one of Calcutta's wealthiest men. Dutt and the grandmother were of the same caste, which meant that the boy could go along with her to live and study in the rich house where she was employed as an honored domestic.

By age 16 Ramdoolal knew Bengali, enough English to "express himself intelligently to an English mate or captain," and was, the scholar Ghose said, a "shrewd accountant." He went to work for his patron Dutt as a collecting *sircar* or bill collector at five rupees (about $13 today) per month. He was on his way from rags to riches, though not yet at great speed. In five years of self-deprivation and scrupulous honesty with respect to what money was Dutt's and what was his, he saved 100 rupees (about $260) and invested it in a timber enterprise in Baugh Bazaar. The profits went to his grandfather's family.

Then came another break: Dutt promoted the youth to ship *sircar* and doubled his pay to ten rupees a month. Ramdoolal's new duties included handling bills of lading and supervising cargo loading and unloading along the busy Hooghly River, part of the sacred Ganges system that flows down from the Himalayas to the Bay of Bengal. He quickly became knowledgeable about all aspects of Calcutta shipping, and a familiar figure along the Hooghly from Diamond Harbor to the Kidderpore docks. He studied the multinational crowds of seafaring men who came to town—skippers, mates, deckhands—becoming friends with many of them and taking abuse from some. He carried out Dutt's commissions at Tulloh's Auction Rooms, and checked out the facts and rumors about shipwrecks, estimating their potential salvage.

One day, when he was in his late twenties, Dutt sent him to Tulloh's with thousands of rupees to bid on a certain lot of merchandise. It had already been sold when he arrived. But he heard the auctioneer describing a ship with a full cargo that had sunk at the mouth of the Hooghly. Bidding was slow, and the bidders seemed to be ignorant of the salvage possibilities. Ramdoolal was not. So he gambled, bid in the wreck for 14,000 of Dutt's rupees, registered his purchase in his employer's name and sat down in

This painting of General Washington was given Ramdoolal by U.S. traders.

Courtesy of Erick Kauders

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Tulloh's smoking room to ponder the enormity of what he had just done.

Then an Englishman rushed into the auction house to bid on the ship. Told that he was too late, he found the *sircar,* and they dickered. When they were through, the Englishman had the ship—and Ramdoolal Dey had a profit of nearly 100,000 rupees. He could have taken the money and run, and most men probably would have. Instead, he went back to his master, Dutt, told him the whole story and laid the profits before him. Amazed and touched at being dealt with so honorably by his *sircar,* Dutt handed the profits right back—and Ramdoolal had an instant fortune worth nearly $400,000 in today's money.

When word got around, as it did, both the shrewd and honest *sircar* and his benefactor were the talk of Calcutta. Ramdoolal lost no time in putting his capital to work. Invaluable to Dutt, he also traded more and more on his own account—moonlighting on the Ganges, as it were. Ghose described some of his achievements, such as a monopoly at one time of the export pepper market and an "in" on the new American market.

He was 31 when the United States gained nationhood in 1783. Before long, ships out of Salem, Boston, Newburyport, Philadelphia and New York were warping into the Calcutta docks. Ramdoolal and the Yankee traders got along famously from the start.

Captains and their backers in America—the leading commercial firms of the day—had ships and cargo space; he had goods and money. He provided them with judicious loans and judiciously selected cargoes, and the result was that many skippers and mates he dealt with became wealthy merchants in their own right while Ramdoolal's fortune grew and grew. In his honor, an American merchant and ship owner named a 446-ton sailing ship plying the China and East India trade *Ramdolal Day* (sic). In the early part of the 19th century his worth exceeded $30 million, and the London

Dr. Emrich, after years in India, now teaches at American University.
His latest books are American Folk Poetry *and* Folklore on the American Land.

A 19th-century view of Hooghly River dock area, where Ramdoolal got rich.

Times dubbed Ramdoolal and his sons "the Rothschilds of Bengal."

A strict Hindu, and one always generous to the poor, Ramdoolal married twice —the second time because his first wife could not bear him a male heir. "With hesitancy and by stealth was his marriage consummated," Ghose wrote, "unknown to his [first] wife, unsuspected even by her. But the news of such an important event in the life of a husband cannot long be kept secret from a spouse." The first wife moved out; after a time Ramdoolal talked her into returning. But after that he "invariably took his meals in the apartments of his first wife and skulked into those of his second after the former had fallen sound asleep." The second marriage was productive enough—two boys and five girls—and Ramdoolal was spared "the orthodox horror for *put*—the hell of the Hindus which is declared . . . to yawn for the childless, the man who leaves no issue after his death to offer up the funeral cake to his 14 generations. . . ."

In Ghose's 1868 lecture on the remarkable Ramdoolal, he noted a high point in the Hindu's career: "Some of the princi-

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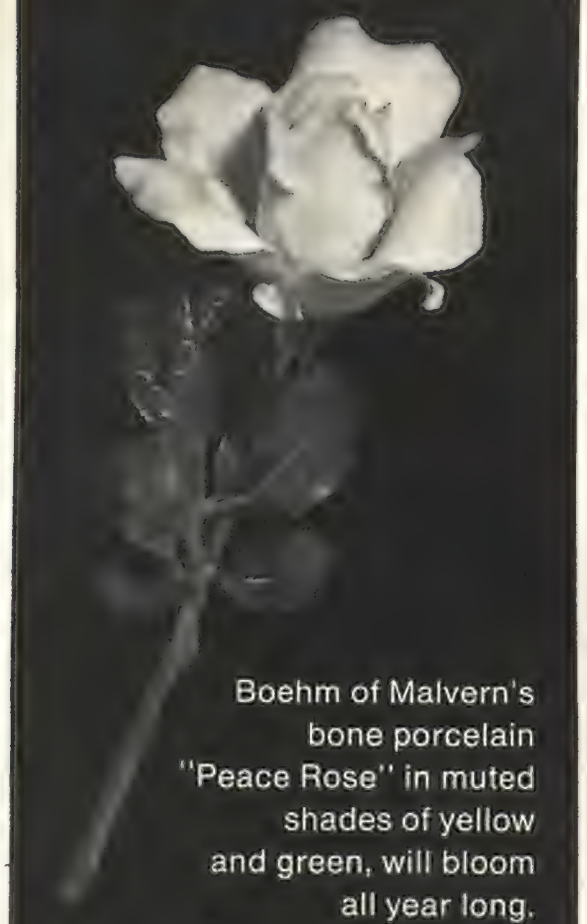

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In Ramdoolal's time, ships like this one out of Salem, Massachusetts, plied

1963, after 162 years, the painting was at last repatriated. The man who bought it, and still owns it, is my friend Erick Kauders of Marblehead, Massachusetts, the Czech-born co-inventor of the World War II bazooka. To me it will always be a great portrait with a great history, unique in representing General Washington's romantic, vicarious, posthumous passage to India and back.

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As with some other portraits of George Washington, there has long been speculation and controversy over the identity of the Ramdoolal Dey painting's creator. When brought back to the United States a dozen years ago, the painting was authenticated as a Gilbert Stuart by an art-restoration expert for the National Gallery of Art, who cleaned and restored it. Other authorities thought it more likely the work of William Winstanley, a contemporary and sometime copyist of Stuart. Still others believe Stuart may have done the head and other artists the rest of the painting. Today the National Portrait Gallery contends that whoever painted this picture, it was not Gilbert Stuart—and the same for the Washington portrait that has hung in the White House for 176 years. *Ed.*

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his type may have been named after him.

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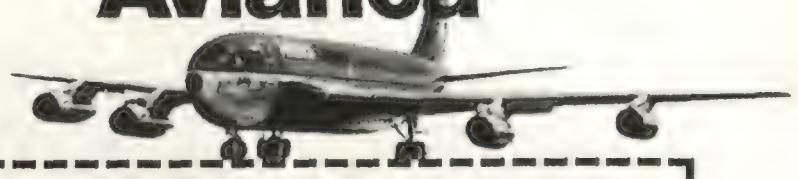

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Nijinsky Dancing
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To substantiate the legend of his abilities, Kirsten offers scores of photographs of Nijinsky in performance. What a telling documentation!

A more complex issue is Nijinsky's role as choreographer. He made only four ballets in a four-year span from 1912 to

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Paris—1910. Nijinsky in "Dance Siamoise" from Fokine's ballet "Les Orientales"

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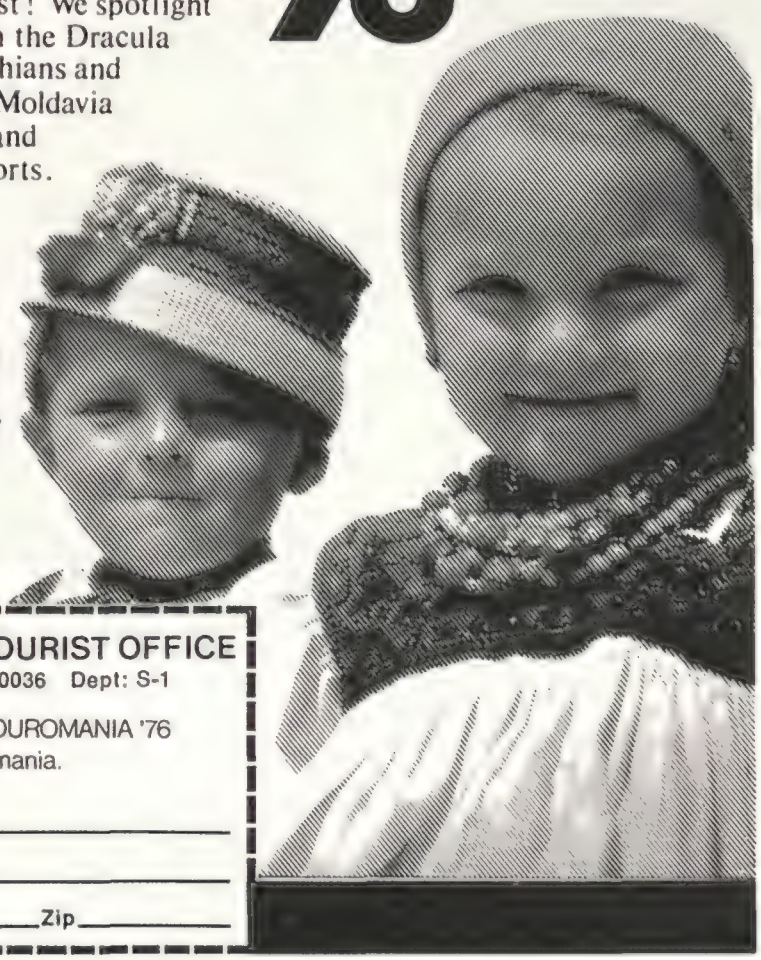

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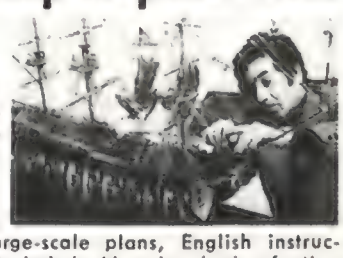

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1916. In theme and gesture they were decisively new. "Jeux," for example, which premiered in 1913, treated a sexual triangle with a frank and subtle sympathy, while "Le Sacre du Printemps," first seen the same year, inverted the traditional positions of the classical academy. Yet despite (or because of) their radical innovations, the works were rarely seen.

Kirstein suggests that Nijinsky was a prophet whose visions were outside of time; his ballets could be taken as paradigms of what he achieved, not prescriptions for future action.

In its structure the book is striking. The first part sets Nijinsky in the context of his times with a series of brief essays on the people by whom he was influenced. They include Marius Petipa, the choreographer of the Imperial Ballet in its decades of glory; Michel Fokine, the reform-minded maker of dances; Isadora Duncan; and the Siamese Court Dancers, a troupe that charmed St. Petersburg at the turn of the century.

There are obvious elements of truth to be learned from stacking up precedents in layer-cake fashion, but they place a historical weight on Nijinsky that is justified only in part. In his performances these influences were clearly reflected; in his own compositions it is more difficult to parse the sources of his art.

The second part of the volume is a photographic biography that is stunning in itself and immensely enhanced by Kirstein's insightful comments. Among the dozens of superb portraits, several are unforgettable: Nijinsky as an ecstatic Gold Negro in "Schéhérazade," as the androgynous-appearing sprite in "Le Spectre de la Rose," as the compactly angular creature, half-human, half-animal, in "L'Après-midi d'un Faune."

Kirstein's prose is brilliantly informed. At times, however, he grows infatuated with his rhetorical skills and his words tend to become bloated. "When we consider the suavity, strength, mutual consideration, and regal authority of Russian performing artists, we realize that Nijinsky's elementary morality and metaphorical courtesy onstage sprang from a solid base." Were he not such an eminent authority on dance, Kirstein well might be a preacher.

Nijinsky Dancing is extremely unwieldy, 12½ inches by 13½ inches, and almost impossible to read unless you are prone. Like the Bible, the book needs to

be supported on its own special stand. Once you conquer its clumsiness, however, the volume is intellectually stimulating and beautiful to behold.
—*George Gelles*
Music and dance critic,
The Washington Star

Cobwebs to Catch Flies
Illustrated Books for the Nursery and Schoolroom 1700-1900
Joyce Irene Whalley
(University of California, $14.95)
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These books, based on outstanding collections of children's literature at the Victoria and Albert Museum Library in London and the Pierpont Morgan Library in New York, splendidly assess the historical fascination that illustrated books have had for children and adults through the ages.

Joyce Irene Whalley of the Victoria and Albert discusses only those books with didactic purposes used in the 18th and 19th centuries. These books warn:

He who ne'er learns his ABC
For ever will a blockhead be:
But he who to his book's inclin'd
Will soon a golden treasure find.

Her survey recalls a world without visual excesses, and emphasizes "the books themselves rather than . . . educational theories they may propound"—an approach that will appeal "more to the general reader, art historian or bibliophile than the professional educationalist."

Whole generations of brilliant Englishmen and women were nurtured as little masters and misses on books covered here, beginning with the early alphabet books with simple letters and going on to later variations by Kate Greenaway and Walter Crane, to books on geography, natural history and other subjects, many with underlying moral themes so that "the child would be thoroughly indoctrinated along the religious, moral and behavioral way his parents wanted."

While the Whalley book is remarkable in every way—solid, scholarly and readable and with fine illustrations—her self-imposed limitations of stressing instructional books are dramatized by the scope of the Morgan collection survey, which

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ranges from the earliest known papyrus fragments in the third century, fables by Aesop and others, to a modern classic like Saint-Exupéry's *The Little Prince*. The selection of some 225 books "shows us," as Charles Ryskamp's preface notes, "how and where children's literature originated and which kinds of stories were chosen *for* children—and *by* children—over the centuries."

Every conceivable kind of children's book is included—bestiaries, hornbooks and battledores, courtesy, religious and emblem books, as well as famous books

Pierpont Morgan Library

An illustration from Dutch children's almanac, published in 1799

that have been adapted for children such as *Gulliver's Travels*, Lord Chesterfield's *Letters*, Samuel Richardson's *Clarissa* and Fielding's *Tom Jones*. The book is divided into 30 subject areas, and each book discussed and illustrated has been impeccably selected.

When publishers realized the simple fact that adults, not children, buy books, widespread commercial activities resulted. Success of a book like *Tom Telescope*, with its "lucid scientific information . . . many asides, allegories, and stories that plead for compassionate humanity, particularly toward animals," inspired numerous publishers to produce moral tales designed to please parents. J.H. Plumb notes in an introductory essay that by the latter decades of the 18th century, authors like Mrs. Trimmer predominated,

with their tales of "corpse-viewing" and their "savage, macabre streak." She was joined by others who produced, as Ryskamp says, "moral tales of unctuous edification." Thankfully, however, Dr. Johnson's view prevailed that "at an early age it was better to gratify curiosity with wonders than to attempt planting truth, before the mind was prepared to receive it, and that, therefore, *Jack the Giant-Killer, Parismus and Parismenus,* and *The Seven Champions of Christendom* were fitter for them than Mrs. Barbauld and Mrs. Trimmer."

By 1800, knowledge for children had spread to all fronts, and many children's books, greatly improved by famous illustrators like Thomas Bewick and others, had "an ease of comprehension" together with a "delight of the contents" creating a permanent revolution in the literature by marrying "text and illustration" that, according to Plumb, "like all true marriages . . . has proved indissoluble."

Gottlieb demonstrates the validity of this marriage in sections given over to the Brothers Grimm, Hans Christian Andersen, the fiction of Sir Walter Scott and Charles Dickens, Edward Lear, Beatrix Potter and others. The result is a masterful book about books that gives a capsule history of the scope of children's literature, with magnificent illustrations throughout. The collaboration between the Morgan Library and Godine (a name becoming synonymous with quality publishing) can take a rightful place in the tradition of book publishing at its best. It is a triumph of the indissoluble link between content and design on a subject of endearing and enduring significance.
—*William Claire*
Poet and former editor of *Voyages*

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the Wilderness Society. Despite his broad interests and influence, his heart was in the Smokies, his first hiking and camping country, his favorite wilderness.

This book consists of selections from the personal journal Broome kept scrupulously from 1941, as chosen by his wife Anne. It is written in graceful, gentle and cheerful language, though it reveals the author as a tough mountain hand, tough and yet contemplative, a man who observed wilderness close enough to grasp and convey its feeling and meaning. Portions of this book, written simply as one man's journal, compare with the finest of Thoreau and Muir, but they, too, were addicted to writing simple journals.

Broome saw the Smokies in every season and in every mood. Each trip was an adventure into another world, but a world as real as gnats and flies and hard beds and blisters could make it. He was out there—and makes the hardier reader wish to have been there with him—when the temperature dropped to 15 degrees below zero and the trees cracked and popped throughout the night, and the ice froze on his eyebrows and eyelashes, and the water froze in his canteen. And yet without complaint, because this was, after all, the natural world and he was sharing it with good companions.

The book contains engaging descriptions of encounters with bears, rattlesnakes, spiders, plants and trees. "Trees," observes the author, "are very satisfying. They stay put; they don't go out at night; they don't have dates. . . . Trees are in a sense more satisfactory than pets because they are longer lived and more predictable. Living less complex lives, they are not as stimulating as people, although, on the other hand, they are less disappointing than many people."

Out Under the Sky of the Great Smokies has depth of purpose as well as breadth of place. This is no tract, but the need for preserving wilderness in modern society is an implicit message. Deploring the separation of urbanized Americans from their roots, Broome relates overhearing an explorer scout say that the water in the Smokies was better on the Tennessee side (than in North Carolina) because it came out of a pipe, thus leading him to challenge: "What sanctity is there to a pipe? Are the woods so forbidding that one is not at home unless there is a pipe?"

Broome was furious at policies of the National Park Service that make things

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easier for park visitors, regardless of consequences to the resource. For him it was the "wind and sunset; the haunting dual notes of the varied thrush; the fugitive fragrance of the phacelia; the bite of cold; the stir and challenge of muscle against mountain; the elixir of water cold from a stream; the flavor of rain-drenched blueberries"—the contact with raw environment—that bring living into focus.

The final entry of 1966 recounts the citizen effort against the bureaucratic scheme to construct a new and needless transmountain road across one of the most significant botanical areas in the Eastern United States. Ten years later, such ideas are still being advanced by bumbling desk-bound technicians in the Smokies and elsewhere in our national parks. *Out Under the Sky* doesn't exactly tell *how* to save America's vanishing untamed fragments, but it gives the sense of *why* in full and delightful flavor.
—*Michael Frome*
Author of *Battle for the Wilderness*

Butterflies in My Stomach: Or, Insects in Human Nutrition
Ronald L. Taylor
(Woodbridge Press, $8.95)

Remember Renfield, the lunatic who dined on spiders and flies in Bram Stoker's *Dracula*? As it turns out, Renfield was more prophetic than wacky. World food shortages and spreading protein deficiencies are causing modern nutritionists to take a second look at spiders and flies as well as locust plagues and wasp colonies. If you have ever seen the maguey worm (*Aegiale hesperialis*) in the bottom of a bottle of tequila, you may have seen our gustatorial future.

And why not? Insect protein, says Professor Taylor, is just as usable, digestible and downright healthy as, say, beef protein. Moreover, he finds insects are more efficient in the conversion of what they eat into body weight; at the same time, insects, unlike cattle, do not need to be stuffed with grains or other foods that could more effectively be fed to humans. How long can we continue giving better quality food to an animal feedlot in the Midwest than we do to an orphanage in Bangladesh? This is a question that deserves some serious debate.

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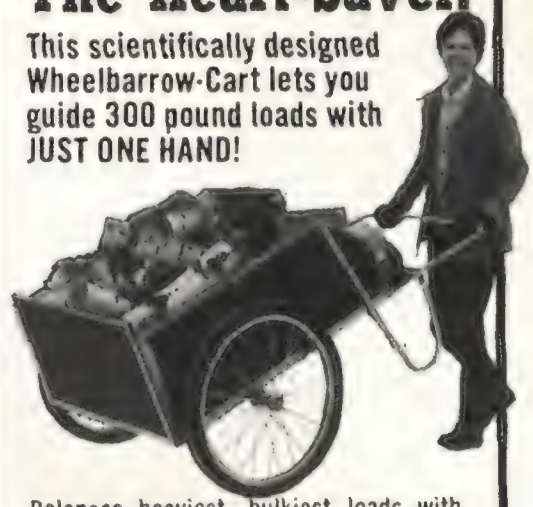

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Plywood construction

protein, the common housefly pupa is a whopping 63 percent!

The next question is, can insects be raised in numbers large enough to feed a hungry population, or must we all spend a large part of the day with butterfly net in hand? Well, the offspring of a single pair of aphids (the bane of houseplant owners) in one six-month season could, if none died, have a posterity of 1,560 sextillion—which would *weigh* more than "the collective weight of . . . the earth's entire human population." The common white grubs, larvae of the June beetle, have averaged about 106,680 grubs per acre of infested land: That's about 235 pounds of food per acre. Between 600 and 1,500 tons of bees are allowed to die each winter in northern apiaries because it is more profitable to harvest the honey in the fall and then buy new bees from southern sellers each spring. In East Africa, a locust storm that covered 600 square miles contained 60 to 420 billion insects: 25,000 to 110,000 tons of protein. The sad part about these records of phenomenal reproduction is that they now represent wasted food—on a planet that cannot afford it.

It has not always been thus. The Aztecs haggled for ears of corn that had earworms *(Heliothis zea)* in them. The tiny rice weevil larvae *(Polycleis equestris)* are very difficult to spot. Anyone who has eaten much rice has certainly had a few; in fact, in many areas of the world, the rice weevil is an important, if unrecognized, protein source.

Insects can be fried, broiled, roasted, dried in the sun, ground into a powder (a flour) or simply popped wiggling into the mouth. In the case of crickets and grasshoppers, it is a matter of prudence to pull off the legs and wings first. Otherwise, everything is easily digestible. Yes, even cockroaches *(Periplaneta americana)*.

Short of actually eating the insects in recognizable form, cautious nutritionists are suggesting that protein extracts be made and used as food supplements. Other products, like termite oil (reportedly as tasty a frying medium as butter), are also being considered.

An entomologist, biologist and pathologist, currently associate clinical professor of pathology at the University of Southern California School of Medicine, Dr. Taylor finds it ironic that Western society, which ingests and enjoys honey as much as it does, still rejects eating the

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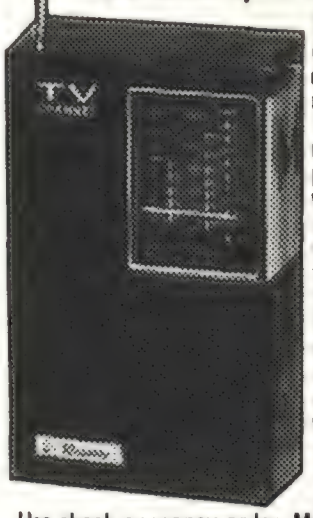

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producers of it. This he finds strange and pounds home the point by stressing that honey is "indeed a very intimate product of the bee, collected as nectar from flowers and carried in the bee's stomach until it is quite literally vomited into the honeycomb." Well, I ask you.

John Gregory Tweed

"Jacob says it's just keeping up with the times!"

Dr. Taylor has done a good job in broaching a delicate subject, one that bears rethinking. Men the world over have always eaten insects. According to the Bible, St. John ate locusts (*Locusta migratoria*). And that is probably because the larvae of the greater wax moth (*Galleria mellonella*) were not available. Says Taylor: "I have eaten these insects on a number of occasions and find them one of the tastiest I've tried—certainly far tastier and more nutritious than snack items such as potato chips...."

—Michael Olmert
Writer and critic

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"This miniature likeness of myself . . . is an excellent one. To my unpracticed eye, it is without fault," Lincoln wrote of this portrait. It has not been published before in color (see opposite, under Portrait Gallery).

Smithsonian highlights

Musical Weekend
The fifth annual Musical Weekend, sponsored by the Division of Musical Instruments and the Friends of Music at the Smithsonian, will be held May 14-16. Reservations are now being accepted for this very popular event.

The weekend begins with a dinner in the historic Smithsonian castle building, followed by a performance and reception at the Kennedy Center. Also included are tours of the Museum's Bicentennial exhibitions and a reception at one of the city's beautiful foreign embassies. A concert played on antique instruments from the Smithsonian's collection, as well as other concerts in a variety of settings, are part of this weekend, especially designed for music-lovers. For information, write: Musical Weekend, Museum of History and Technology, Room 4123, Washington, D.C. 20560.

National Portrait Gallery
The National Portrait Gallery has acquired a miniature portrait of Abraham Lincoln by John Henry Brown (opposite). The miniature was painted from life in Springfield, in five sittings between August 14 and 25, 1860. Commissioned by Judge John M. Read of Philadelphia, the portrait was given by him to Mrs. Lincoln. It passed from her to Robert Todd Lincoln and remained in the Lincoln family until 1973.

Castle Building
A Bicentennial exhibition sponsored by the National Capital Planning Commission, the D.C. Commission of Fine Arts and the Smithsonian Institution tells the story of the planning of the city of Wash-

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ington. The show, "Federal City: Plans and Realities" uses three-dimensional models, photographs, prints and paintings to demonstrate planning stages from the time of Pierre L'Enfant to the still unrealized plans of the Pennsylvania Avenue Development Corporation. Original models from the Senate Park Commission of 1902 are being restored and new models are being constructed especially for the exhibition. The planning process itself is analyzed, explored and explained in the exhibit—opens February 23.

Division of Performing Arts

- Grandpa Jones, one of the most popular banjoists in the country and a star of "Hee-Haw," performs in the American Banjo series—February 1, 8 P.M., Baird Auditorium, Museum of Natural History.
- Selections from Elliott Carter, Beethoven and Brahms are played in the Music from Marlboro series—February 7, 5:30 P.M., Baird Auditorium.
- The New York Jazz Repertory Company presents the music of Bix Beiderbecke in the Jazz Heritage series—February 8, 4:30 P.M. workshop, 8 P.M. concert, Baird Auditorium.
- The Theater Chamber Players present a program of Schumann, Debussy, Somers and Carter—February 16, 8:30 P.M., Baird Auditorium.
- Yank Lawson, Bob Haggart and the World's Greatest Jazz Band play music from blues to Bacharach—February 22, 8 P.M., Baird Auditorium.
- Appearing for the first time in this country, the Ensemble Nipponia of Japan performs on traditional Japanese instruments in the People and Their Culture series—February 29, 8 P.M., Baird Auditorium.

For information regarding tickets, discounts for senior citizens, students and Resident Associates, call (202) 381-5395.

Anacostia Neighborhood Musum

"Black Women: Achievements Against the Odds" examines the roles, contributions and achievements of black women in many phases of American life since Colonial times. Over one hundred women are highlighted in the show, including Gwendolyn Brooks, Lorraine Hansberry, Mary McLeod Bethune and Mary Church Terrell. The exhibition is part of the Museum's Bicentennial program—opens February 8.

Travel Benefits for Smithsonian Associates

With the growth of the Smithsonian Associates, the Institution is striving to meet the needs of its membership by offering a varied travel program. Traditionally, Foreign Study Tours provided culturally oriented, first-class, specialized trips under the guidance of museum curators or experts in respective fields. Then, Domestic Study Tours were added to offer similar opportunities within the United States, thus allowing Associates and their families a chance to combine vacation with a period of study. A year ago, Foreign Charter Tours were introduced; these trips are larger, lower-cost and more generalized in nature.

Domestic Study Tours

Yellowstone in the Snow—February 27-March 5: A survey of the wildlife and geography by snowmobile coach; accommodations at Old Faithful Snow Lodge • **Weekend at the Hirshhorn**—March 5-7: A comprehensive study of contemporary painting and sculpture • **All About Gems Weekend**—March 19-21: Dinner in the Hall of Gems; meeting with curators and staff; behind-the-scene tour of mineral and gem collections • **Death Valley, A Camping Experience**—April 3-11: Explore the surrounding mountain ranges and Death Valley Monument; learn about the geology and mining history of the area • **Colorado River Float**—July 10-18 and July 24-August 1: Two exciting raft expeditions through the Grand Canyon with emphasis on ecology and natural history • **Alaska Adventure**—July 24-August 7: Departing from Seattle, see Alaska by land, sea and air. Highlights include cruise on Glacier Bay and wildlife tour of Mt. McKinley National Park • Coming in August, a trip to **Southwest Pueblos** featuring the Corn Dance at Santo Domingo; **Massachusetts Heritage,** historical tour from Boston to the Berkshires; and the **Wind River Mountains,** a pack trip in this wilderness area of Wyoming • **Washington "Anytime" Weekend**—Choose any weekend to visit the nation's capital and enjoy a special tour of the original Smithsonian building, two nights at the elegant Loew's L'Enfant Plaza Hotel, close by, and a chance to see other sights in Washington by Tourmobile (reservations required ten days prior to weekend) • Write Smithsonian Associates Travel Program, A & I 1270B, Smithsonian Institution, Washington, D.C. 20560 for reservations or call (202) 381-5910 for information.

Foreign Study Tours

Sites of Ancient Civilization—April 2-25: Cruise aboard the yacht *Argonaut* between ports of Rome and Athens, in the eastern Mediterranean. Trip includes Sicily, Tunisia, Malta, five days up the Egyptian Nile, southern coast of Turkey, and Orthodox Good Friday in Patmos • **Sicily and Southern Italy**—June 6-28: Archaeological sites and museums from Naples south, including complete circuit of Sicily, under direction of Dr. Richard Howland of the Smithsonian, architectural historian and classical archaeologist • **Morocco and Egypt**—September 27-October 19: Tours of these fascinating countries, including a steamer cruise on the Nile • **Adriatic Shores**—October 2-17: From Athens to Athens on the *Argonaut,* via Dalmatian Coast, three days in Venice and Vicenza, Ravenna, Bari, Brindisi, Lecce and Taranto • Write Miss Bliss Schumann, Foreign Study Tours, SI 123, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5520.

Foreign Charter Tours

Australia*—April 10-May 2: Sydney, Melbourne and Canberra; "lifeseeing" seminars and excursions into the countryside; choice of side trip to Great Barrier Reef, or Adelaide overland to Alice Springs, or Tasmania and Southern Australia • **Eastern Europe***—May 6-20: Hungary and Czechoslovakia. "Lifeseeing" and museum seminars in Budapest; excursions to Lake Balaton and Eger before traveling on the Danube by hydrofoil to Bratislava. Trips to the Bohemian towns of Telc and Kutna Hara; a five-day program in Prague • **Soviet Central Asia***—May 9-24: A trip to old Turkestan, with a stop in Moscow. Visit Samarkand, Bukhara, Tashkent and Khiva and see monuments of ancient Oriental and Islamic cultures from the times of Alexander the Great, Genghis Khan and Tamarlane • **Great Britain**—September 16-30: The National Gallery, Tate, Victoria and Albert; walking tours of literary London and excursions in the countryside; the best of London theater • **Russia***—October 4-18: The Bolshoi, Moscow Circus, Hermitage; schools, factories and housing in Moscow, Leningrad and Tallinn • **Mexico City and Yucatan**—November 6-17: A study program in Mexico City concentrating on Aztec and Toltec cultures; visits to the Mayan ruins of Chichén-Itzá, Uxmal and Palenque • Low cost of tours includes first-class hotels, most meals, sightseeing, lectures, theater tickets and round-trip air fare from Washington, D.C. (Australia tour originates in San Francisco; Mexico and Yucatán trip originates in Mexico City). Foreign Charter tours are heavily subscribed, so write early for reservations and additional details concerning a specific trip to Smithsonian Associates Travel Program, A & I 1270B, Smithsonian Institution, Washington, D.C. 20560 or call (202) 381-5910 for information. *Optional pre-departure courses, planned to enhance understanding of the countries to be visited, will be offered.

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Renwick Gallery

"Signs of Life: Symbols in the American City" examines the origin, evolution and meaning of symbolism in the home, the commercial strip and the 19th-century city. Photographs, paintings, electric signs, billboards, street fixtures and home furnishings present examples of symbols and signs in a home setting, an urban environment and a "Route 66" scene. The show presents a balanced view of the signs and symbols that have become distinctively identified with the United States—opens February 26.

National Collection of Fine Arts

"George Miller and American Lithography" salutes the printer who did much to further the development of artist-lithographers in the United States after World War I. Sixty lithographs printed by Miller are shown, including works by George Bellows, Arthur B. Davies, Charles Sheeler, Thomas Hart Benton, Grant Wood, Stuart Davis, Rockwell Kent and Yasuo Kuniyoshi—opens February 13.

". . . and there was light: Studies by Abraham Rattner for the Stained Glass Window, Loop Synagogue, Chicago" presents preparatory drawings and studies for the 30- by 40-foot window completed by Rattner in 1958. Designing the stained-glass window entitled "And God Said, Let There Be Light" was a major undertaking requiring several years of work. The artist developed a complex and beautiful series of symbols for the window and then personally supervised its construction in Paris—through March 28.

Traveling Exhibition Service

More than 600 organizations in all corners of the United States show exhibitions sponsored by the Smithsonian Traveling Exhibition Service. The subjects, ranging from art to science to history, reflect the diversity of the Smithsonian Institution. For information on bringing an exhibition to your community, write: Smithsonian Institution Traveling Exhibition Service, Washington, D.C. 20560.

- Edison, New Jersey—"Workers and Allies," a history of women's participation in the trade union movement, New Jersey Occupational Resource Center, February 7-March 7.
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picted through illustrations, music, photographs and newspaper clippings, Colorado State University Library, February 7-March 7.

• Haywood, California — "The Black Presence in the Era of the American Revolution," a history of blacks during the Revolutionary period, Cabot College Library, February 7-March 7.

• Jackson, Mississippi—"The Five Sense Store," children's exhibition exploring audio and visual senses, Mississippi Art Association, February 14-March 28.

• Newark, Delaware—"Story of a Goblet," the techniques of glassmaking, University of Delaware, February 7-March 7.

• Northfield, Minnesota — "Molas from the San Blas Islands," examples of unique textile works by Cuna Indians, Carleton College, February 7-March 7.

• Valley City, North Dakota—"Contemporary Crafts of the Americas," traditional and whimsical ceramics, fibers and metals from the Americas, Valley City State College, February 7-March 7.

Winter Museum Hours

The Arts and Industries Building, former home of the *Spirit of St. Louis,* the "moon rock" and the Apollo 11 command module, is closed for Bicentennial renovation. Other Smithsonian buildings are open daily from 10 A.M. to 5:30 P.M. The National Zoo is open from 9 A.M. to 4:30 P.M. daily.

Parking for Visitors

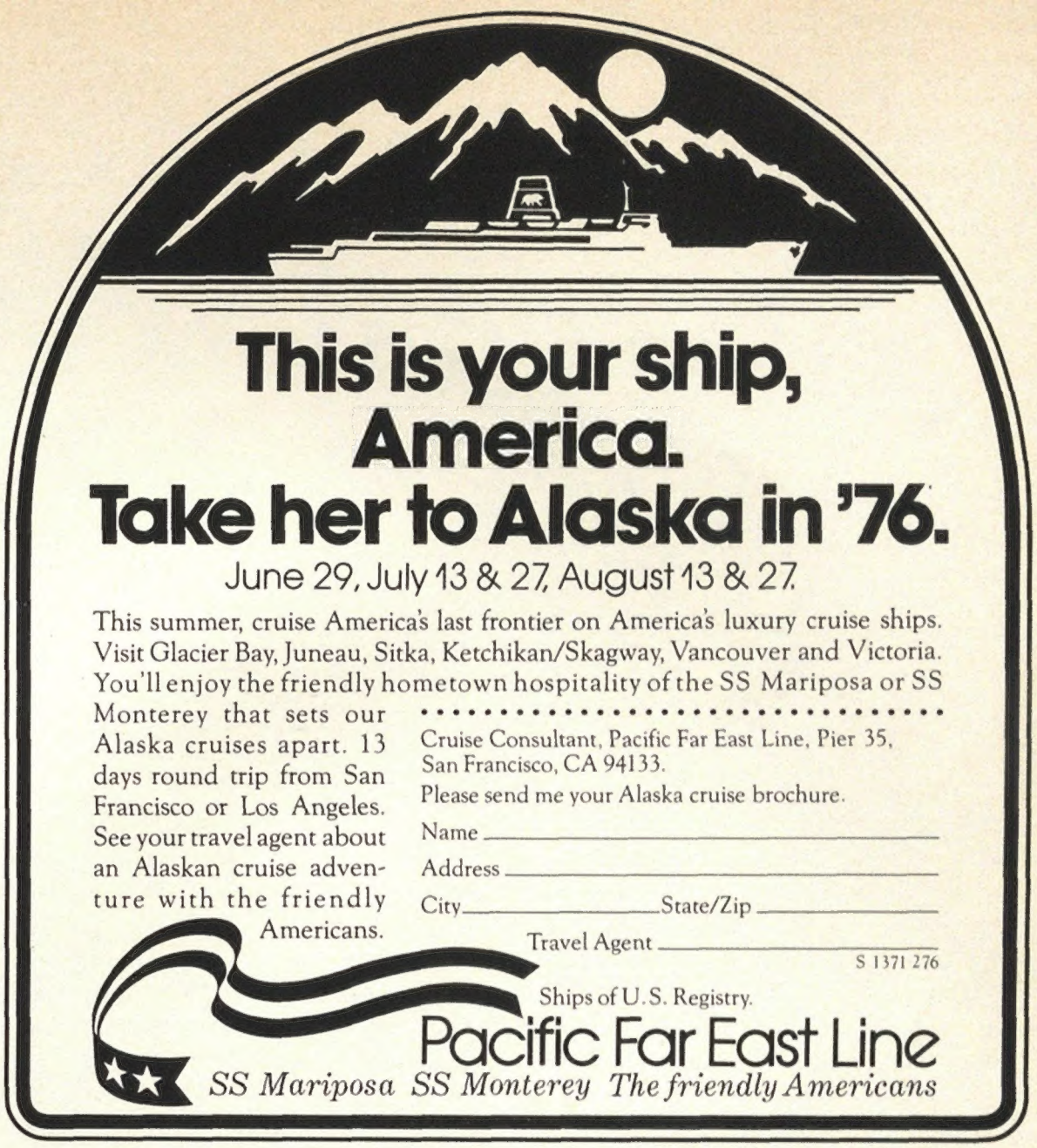
A garage under the new Air and Space Museum is now open to the public, providing parking spaces within easy walking distance of most Mall museums. Fees are structured to discourage commuter parking. The entrance is on 7th Street, between Independence Avenue and Jefferson Drive S.W.

Bicentennial Information

Any Associate planning to come to Washington next year should write for advice to the Visitor and Associates Reception Center, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Commons

The Commons is now open on weekends for Associates and their families, offering a buffet luncheon for $3.25, with a reduced rate for children. Beverages and desserts are optional. Hours are 11:15 A.M. to 2:15 P.M. seven days a week.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By H. Allen Smith

There's no hotfoot like a scorpion bite

The 6,000 people who live in the West Texas town of Caliche are not a bit afraid of any old great white shark. In order to get within the town boundaries, one of these man-killers would have to negotiate 800 miles of the Rio Grande, which in spots is no more than dishpan deep, and after that he'd need to scrunch himself 100 miles across a cruel landscape.

We don't need him. We are already afflicted with a species more frightening than that Long Island shark. We are required to live in the steady company of a creature that frightens many of us clean out of our wits. Namely, the scorpion.

I can't remember ever having seen a scorpion before I settled in the Southwest. I was warned about the possibility of hailstones as big as King Cole cabbages; I was cautioned about the wickedness of the desert, where "everything either stings, sticks or stinks." When it came to the matter of the scorpions, my accommodating neighbors delivered their warnings with shudders and a fearful rolling of the eyeballs. Almost always they used the same words: "One uh them gets you on the foot, you'll go right through the ceiling!"

Even the doctors rolled their eyes as they cautioned me against walking around the house barefoot at night. If I needed to get out of bed, even for only 30 seconds, put on shoes. I was told that many stalwart citizens, willing to grapple with a mountain lion or an infuriated wild hog, will cower and tremble in the presence of a two-inch scorpion with his tail aroused, and some of them will run into the street screeching with fright. As you may know, the stinger is located on the end of the tail and that tail is equipped with a universal joint, permitting it to strike in all directions. It uses this weapon to nail cockroaches, centipedes, black widow spiders and Texans.

In the process of knowing mine enemy I became acquainted with the writings of Dr. Herbert L. Stahnke, former director of the Poisonous Animals Research Laboratory at Arizona State University, probably the No. 1 scorpion man in the country. "Since ancient times," he says, "scorpions have struck terror into the mind of man. They have often been feared more than snakes. . . ." This is reflected in the Latin names given scorpion groupings by old-time biologists: *Pandinus*—quite terrible; *Ioctonus*—poison and kill; *Vaejovis*—god of the underworld; *Miaephonus*—stained with blood; and *Palamnaeus*—murderer.

Some people say that when a scorpion whangs you in the night, it is the same as a white-hot poker being applied to your flesh. There is only one deadly species in the continental United States. It is found in Arizona and parts of California and is called *Centruroides sculpturatus*. If one of these stings you there will first be a great shooting pain, followed by unique spasms, a wild flailing about of the arms; then the hands and feet turn a deep blue, you twitch, your tongue grows thick, and you go into chaotic convulsions. All of this may continue for 10 or 12 hours, and may or may not be fatal.

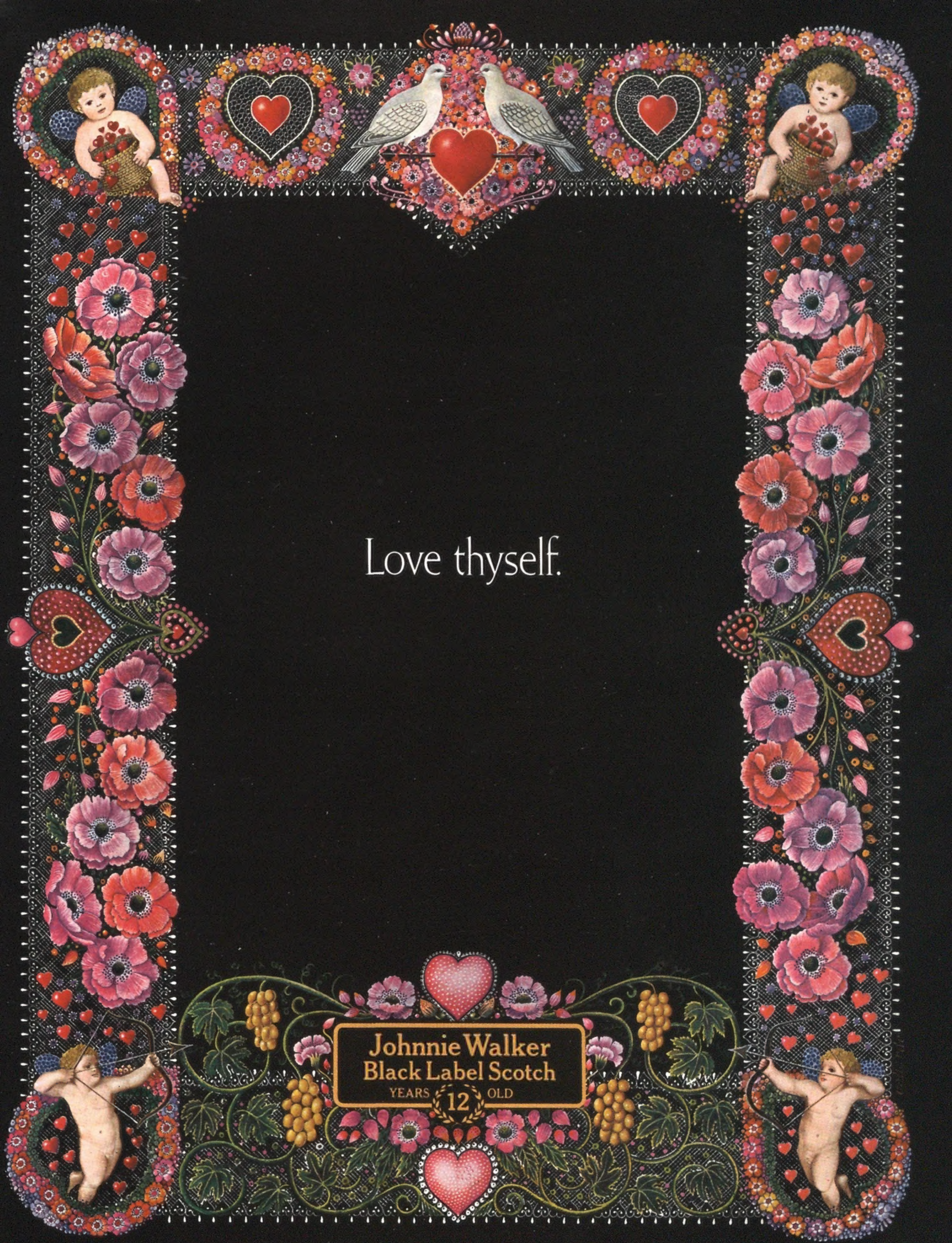
The thing that disturbs me most is the likelihood that old *Centruroides sculpturatus* is growing restless in Arizona and moving eastward into my homeland. A new species, *Centruroides pantheriensis,* has been captured in the nearby Big Bend National Park. He looks enough like the murderer *sculpturatus* to be his brother. His sting is shockingly painful but he doesn't kill human beings.

Scorpions despise one another. They don't like anybody. Yet they have laudable traits. The mothers sometimes eat their young and, after mating, the female may devour her lover. The more of this the better.

And they do have their tender moments. In their courtship dance the male grasps the female's claws, which are called pedipalps. Both parties arch their long tails and hook them together and this sort of thing goes on for several hours. Now and again they indulge in a bit of juddering. This is a new word to me.

When one judders, if one is a scorpion, one jerks the body back and forth seven or eight times without moving the feet. I have tried it. It doesn't add up to much. And in spite of these romantic attributes, I can't keep my mind off the danger. I am contemplating action. In Africa they have scorpions that are big and assertive and lethal. Their sting can kill a man in a few hours, a dog even quicker, and it has a toxicity almost equal to that of a cobra. The jungle baboons know how to deal with them. They tear off the poisonous tails and eat the rest.

It is my proposal that in case of invasion, the city council of Caliche stand ready to import 6,000 baboons from Africa—one for each member of the community. *That'll* make the *Centruroides* varmints judder!



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